

MA-5 Authoring Tool User's Manual (ATS-MA5-SMAF Edition)

Ver.1.3.3

2004/11/15

YAMAHA Corporation

| |
|--|
| <p>Copyright to this document is the property of Yamaha Corporation. Transfer or copying of this document in part or in whole requires the permission of Yamaha Corporation. The contents of this document are subject to change without notice.</p> |
|--|



Copyright© 2003-2004 YAMAHA CORPORATION
All rights reserved.

Introduction

MA-5 Authoring Tool is the application software for authoring, correcting, and verifying the contents for portable terminals. The operating systems for running this software include Windows®2000 and Windows®XP.

The use of this application allows a conversion from SMF (*Standard MIDI file*) into Synthetic Mobil Application Format (*hereafter called "SMAF"*) which is proposed by YAMAHA, editing of voices, editing of management information, and verification of voice generation by MA-5 emulator.

Recommended Operating Environment

The recommended operating environment for this Authoring Tool is as follows.

| | |
|-----------------------------|---|
| Compatible Operation System | Microsoft® Windows® XP Microsoft® Windows® 2000 |
| CPU / Clock | Pentium®, Celeron™, or compatible processor/ 800MHz or more |
| Memory | 64MB or more |
| Required hard disk space | 40MB or more |

【Note】 All names of products that are presented in this manual are trademarks and registered trademarks of their companies respectively.

Contents

| | |
|--|----|
| INTRODUCTION..... | 2 |
| REVISION HISTORY..... | 6 |
| 1. ABOUT MA-5 AUTHORING TOOL..... | 8 |
| 2. HOW TO START UP THE MA-5 AUTHORING TOOL?..... | 11 |
| 2.1. INSTALLATION OF MA-5 AUTHORING TOOL..... | 11 |
| 2.2. START-UP OF AUTHORING TOOL..... | 12 |
| 3. REFERENCE..... | 13 |
| 3.1. APPLICATION WINDOW..... | 13 |
| 3.2. TITLE BAR..... | 14 |
| 3.2.1. System Menu..... | 14 |
| 3.3. MENU BAR..... | 15 |
| 3.3.1. File Menu..... | 16 |
| 3.3.2. Edit Menu..... | 17 |
| 3.3.3. View Menu..... | 17 |
| 3.3.4. Window Menu..... | 18 |
| 3.3.5. Option Menu..... | 19 |
| 3.3.6. Help Menu..... | 19 |
| 3.4. CONTROL BAR..... | 20 |
| 3.5. VOLUME BAR..... | 21 |
| 3.6. REPORT BAR..... | 21 |
| 3.6.1. About RAM Size..... | 22 |
| 3.7. TOOL BAR..... | 23 |
| 3.8. LED/MTR BAR..... | 24 |
| 3.9. PREFERENCE BAR..... | 24 |
| 3.10. HV BAR..... | 25 |
| 3.11. CONTENTS INFORMATION BAR..... | 25 |
| 3.12. DENSITY REPORT BAR..... | 26 |
| 3.12.1. Calculation Method of Event Density..... | 26 |
| 3.12.2. STM Display (the Maximum StreamPCM Unit Bytes Number)..... | 27 |
| 3.13. STATUS BAR..... | 28 |
| 4. DESCRIPTION OF EACH WINDOW..... | 29 |
| 4.1. FILE LIST WINDOW..... | 29 |
| 4.1.1. Direct Play..... | 30 |
| 4.2. SCORE WINDOW..... | 31 |
| 4.2.1. Piano Roll Window..... | 32 |
| 4.2.2. VS and LED for StreamPCM..... | 33 |
| 4.2.3. Assignment of StreamPCM..... | 34 |
| 4.2.4. Assignment of HV-Script..... | 35 |
| 4.2.5. Event List Window..... | 36 |
| 4.3. VOICE LIST WINDOW..... | 37 |
| 4.3.1. Normal Voice List..... | 37 |
| 4.3.2. Drum Voice List..... | 38 |
| 4.3.3. HV Voice List..... | 39 |
| 4.3.3.1. Voice List Window (Copy & Paste Function for Normal/Drum Voices)..... | 39 |
| 4.3.3.2. Voice List Window (Right-Click Menu for Normal/Drum Voices)..... | 40 |
| 4.3.3.3. Loading of Voice List..... | 41 |
| 4.3.3.4. Saving Voice List..... | 42 |
| 4.4. VOICE ASSIGN MAP..... | 43 |
| 4.4.1. Voice Assign Map (Copy & Paste Function)..... | 44 |

| | |
|--|-----------|
| 4.4.2. Voice Assign Map (Right-Click Menu) | 45 |
| 4.5. STREAMPCM ASSIGN MAP | 46 |
| 4.5.1. Details about Note to which a StreamPCM can be assigned | 46 |
| 4.5.2. Details about Sound File which can be registered as StreamPCM | 47 |
| 4.5.3. StreamPCM Assign Map (New/Delete Function) | 47 |
| 4.5.4. StreamPCM Wave Panpot | 48 |
| 4.5.5. StreamPCM Assign Map (Right-Click Menu) | 48 |
| 4.6. HV EXTEND VOICE MAP | 49 |
| 4.6.1. HV Extended Voice Map (Delete/Copy/Paste Function) | 49 |
| 4.6.2. HV Extended Voice Map (Right-Click Menu) | 50 |
| 4.7. HV-SCRIPT ASSIGN MAP | 50 |
| 4.7.1. HV-Script Assign Map (New/Delete/Copy/Paste Function) | 51 |
| 4.7.2. HV-Script Assign Map (Right-Click Menu) | 51 |
| 4.8. HV-SCRIPT EDIT WINDOW | 52 |
| 4.8.1. HV-Script Creation Procedures | 53 |
| 4.9. MIXER | 54 |
| 4.10. EVENT DENSITY | 54 |
| 4.11. STM SIZE | 55 |
| 4.12. VELOCITY CHANGE | 55 |
| 4.13. EDIT INFORMATION | 56 |
| 4.14. FILE ACCESS LOG | 57 |
| 4.15. PREFERENCE | 58 |
| 4.16. DVA CHECKER | 59 |
| 4.17. ABOUT AUTHORIZING TOOL | 60 |
| 4.18. VOICE EDIT WINDOW | 61 |
| 4.18.1. FM Voice Edit Parameter | 61 |
| 4.18.2. List of FM Fundamental Waveform | 64 |
| 4.18.3. PCM Voice Edit Parameter | 66 |
| 4.18.4. LP/EP Automatic Control Function | 70 |
| 4.18.5. AL Voice Edit Parameter | 71 |
| 4.18.6. HV Voice Edit Parameter | 75 |
| 5. SUPPLEMENTAL INFORMATION | 77 |
| 5.1. VOICE LIST | 77 |
| 5.1.1. MA-5 Native Normal Voice Map (FM16 mode 0 to 63) | 77 |
| 5.1.2. MA-5 Native Normal Voice Map (FM16Mode 64 to 127) | 78 |
| 5.1.3. MA-5 Native Normal Voice Map (FM32 mode 0 to 63) | 79 |
| 5.1.4. MA-5 Native Normal Voice Map (FM32 mode 64 to 127) | 80 |
| 5.1.5. MA-5 Native Normal Drum Instrument (FM16 mode) | 81 |
| 5.1.6. MA-5 Native Normal Drum Instrument (FM32 mode) | 82 |
| 5.1.7. MA-5 Native Normal Drum Instrument (FM32 mode) | 83 |
| 5.2. ERROR MESSAGE | 84 |
| 5.2.1. Error Message at Input/Output | 84 |
| 5.2.2. Error Message for Start-up | 85 |
| 5.2.3. Error Message for Internal Input/Output | 85 |
| 5.2.4. Error Message for MIDI | 86 |
| 5.2.5. Error Message for Wave Data | 86 |
| 5.2.6. Error Message for User's Operation | 87 |
| 5.2.7. Other Error Message | 87 |
| 5.3. WARNING MESSAGE | 88 |
| 5.3.1. Warning Message at Input/Output | 88 |
| 5.3.2. Warning Message for Start up | 88 |
| 5.3.3. Warning Message for Wave Data | 89 |
| 5.3.4. Warning Message at User's Operation | 89 |
| 5.4. VERIFICATION MESSAGE | 89 |
| 5.4.1. Verification Message for Start up | 89 |
| 5.4.2. Verification Message for MIDI | 89 |
| 5.4.3. Verification Message at User's Operation | 90 |
| 5.5. SHORTCUT KEY | 91 |
| 5.5.1. Shortcut Key for Common to Each Window | 91 |

| | |
|--|----|
| 5.5.2. Shortcut Key for Menu Bar | 91 |
| 5.5.3. Shortcut Key for Control Button | 91 |
| 5.5.4. Shortcut Key for File Menu..... | 92 |
| 5.5.5. Shortcut Key for Edit Menu | 92 |

Revision History

| Ver. | Date | | Description |
|-------|------------|---|--|
| 1.0.0 | 2003/04/25 | | Newly Released |
| 1.0.1 | 2003/05/07 | | Hyper-Threading environment was accepted from recommended operating environment. |
| 1.0.2 | 2003/6/13 | | The description about Hyper-Threading un-corresponding is deleted from recommended operating environment. |
| 1.1.0 | 2003/9/12 | 3.2.1. 3.2.1.1 3.2.6 3.3 3.4 3.5 3.5.1 4.3 4.7 4.11 4.13 5.2 5.2 7. | Explanation about File Manu was added. Picture on Direct Play was changed. Notations were changed. Picture in Control Bar was changed, and also explanation of TB was changed. Picture and explanation about Volume Bar were newly added. Explanations about report-bar and timing of RAM size check were added. Explanation about RAM size was added. Picture on Stream PCM Assign Map was changed. Explanation about MA-3 was added. Explanation about STM Size Window was changed. Explanation about Preference was changed. Picture on About was changed. Picture on PCM Voice Edit Parameter was changed, and explanations were added. Explanation about LP/EP Automatic Control Function was added. Error messages were added. |
| 1.2.0 | 2004/01/19 | 1. 3. 3.3 3.3.1 3.3.2 3.3.4 3.3.5 3.3.6 3.7 3.8.2 4.1 4.2.2 4.3.1 4.3.2 4.12 4.14 5.2 | Description about VLW-MA3 was added in the section "Realize the Various Sounds Easily by Using Voice Library." Picture of "Application Window" was changed. Picture of "Menu Bar" was changed. Picture of "File Menu" was changed. Description about "Direct Play" was deleted from File menu, and "Direct Play" function was added into File List. Description of "Open" was changed to "Open (Add File List)...." Picture of "Edit Menu" was changed. "Undo" and "Redo" functions were newly added. Picture of "Window Menu" was changed. "File List" function was newly added. Picture of "Option Menu" was changed. Picture of "Help Menu" was added. "Authoring Tool Help" was newly added. Picture of "Tool Bar" was changed. "Undo" and "Redo" function were newly added. Support to a read of SMF Format1 Restriction of the number of maximum Stream PCM unit bytes was changed into 8 Kbytes/s (MA-3) / 12 Kbytes/s (MA-5). Description of "File List Window" function was newly added. Picture of "Piano Roll Window" was changed. A display about "Stream PCM Edit View" function was added. "Paste Voice List" item addition to a Voice Assign Map voice name upper right click menu. In Right Clock Menu of Voice Assign Map, "Undo" and "Redo" function were added. Stream PCM Reserve function was deleted. Picture was changed. Error messages were updated. |
| 1.3.3 | 2004/11/15 | ALL 3.1 3.2.1 3.3 3.3.3 3.3.4 3.3.6 | Composition of whole document was reorganized and revised. Reference pages were newly added into descriptions in this document. GUI in this document were updated and changed. Functions for HV were newly added in this Authoring Tool. GUI was changed since new functions "LED/MTR bar", "HV bar", "Preference Bar", "Contents Information Bar", and "Density Report Bar" was newly added into View Menu. And other menus were also updated. Icon Popup Menu was renamed to "System Menu." GUIs were changed since contents and functions in each menu were updated. [Note] was newly added. GUI was changed. Descriptions and reference pages about each new function were newly added. GUI was changed. Descriptions and reference pages about each new function were newly added. Description about "Reset" function was corrected. |

| Ver. | Date | Description |
|-----------|------|--|
| | | Description and supported web link was changed. (SMAF Official Website (Japanese) → SMAF Official Website (Global)) |
| 3.5 | | [Note] was newly added. |
| 3.6 | | “RS” function was newly added. Description was newly added. |
| 3.7 | | Description about HV was newly added into a table about “RAM Size Check Timing.” GUI was changed since functions “HV-Extend Voice Map” and “HV-Script Assign Map” were newly added. Descriptions and reference pages about each new function were newly added. |
| 3.8 | | “LED/MTR Bar” was newly added. |
| 3.9 | | “Preference Bar” was newly added. |
| 3.10 | | “HV Bar” was newly added. |
| 3.11 | | “Contents Information Bar” was newly added. |
| 3.12 | | “Density Report Bar” was newly added. |
| 3.13 | | GUI was changed since “Density Report Bar” was newly added. Functions “STM”, “AD”, “MD”, “MDP”, “Mode Display”, and MA-3/5 Display” were deleted from Status Bar. |
| 4.1.1 | | Description and figure about procedure to operate a Direct Play was newly added. |
| 4.2 | | GUI was changed since functions “KS” and “HV” was newly added. |
| 4.2.1 | | Description and reference pages about each new function were added. |
| 4.2.1 | | GUI was changed since new function “HV Sequence Edit View” was newly added. |
| 4.2.2 | | Description and reference pages about each new function were added. |
| 4.2.2 | | Description and figure about “LED/MTR setting procedure in StreamPCM” was newly added. |
| 4.2.3 | | Description and figure about “StreamPCM assignment procedure” was newly added. |
| 4.2.4 | | Description and figure about “HV-Script assignment procedure” was newly added. |
| 4.3.3. | | “HV Voice List” was newly added. |
| 4.3.2.3.4 | | Section about “Loading by Bank Unit (HV Voice Bank)” was newly added. |
| 4.3.2.3.7 | | Section about “Saving by Bank Unit (HV Voice Bank)” was newly added. |
| 4.4.1 | | GUI was changed. |
| 4.4.2 | | GUI was changed. |
| 4.5.4 | | Description about “Stream PCM Wave Panpot” was corrected. {(Stereo Sound File;Lch, Panpot=0, Rch, Panpot=127→Stereo Sound File;PanOff (Stereo Playback))} |
| 4.6 | | Description about “HV Extend Voice Map” was newly added. |
| 4.6.1 | | Description about “HV Extend Voice Map (Delete/Copy/Paste Function)” was newly added. |
| 4.6.2 | | Description about “HV Extend Voice Map (Right-Click Menu)” was newly added. |
| 4.7 | | Description about “HV-Script Assign Map” was newly added. |
| 4.7.1 | | Description about “HV-Script Assign Map (New/Delete/Copy/Paste Function)” was newly added. |
| 4.7.2 | | Description about “HV-Script Assign Map (Right-Click Menu)” was newly added. |
| 4.8 | | Description about “HV-Script Edit Window” was newly added. |
| 4.8.1 | | Description and figure about “HV-Script Creation Procedures” was newly added. |
| 4.13 | | GUI was changed. Function “Language” was newly added. |
| 4.15 | | GUI was changed. Functions “HV Check Box, HV Type” were newly added. |
| 4.17 | | GUI was changed since the version of Authoring Tool was updated. |
| 4.18.6 | | “HV Voice Edit Parameter” was newly added. |
| 5.2~ | | “Error Messages”, “Warning Messages”, and “Verification Messages” were corrected & Updated. |

1. About MA-5 Authoring Tool

Possible to Create a Content for both MA-3 and MA-5

By using MA-5 Authoring Tool, both MA-3 contents and MA-5 contents can be created by changing AT-mode. For details about “**AT-Mode**”, see the following. (p. 24, 58)

Independence of MA-5 Authoring Tool and Sequencer

MA-5 Authoring Tool is independent application software that is used together with general-purpose MIDI sequencer. Therefore, the user is allowed to select the most familiar sequencer. All operations up to conversion to SMAF file can be made by performing sequence using your sequence software, and performing editing of voices and editing of management information using MA-5 Authoring Tool.

Maximum of Enabling Simultaneous Voices

MA-5 Authoring tool has “**FM16 mode**”, “**FM32 mode**”, and “**ALL64 mode**.” The maximum of enabling simultaneous sound generation depends on the mode setting, or whether using or not using AL Channel.

MA-3 Mode

| | FM Synthesizer | PCM Synthesizer | Stream PCM | Total |
|-----------|----------------|-----------------|------------|-------|
| FM16 Mode | 16 | 8 | 2 | 26 |
| FM32 Mode | 32 | 8 | 2 | 42 |

MA-5 Mode

The maximum of enabling simultaneous sound generation without AL channel are described as follows.

| | FM Synthesizer | PCM Synthesizer | Stream PCM | HV | Total |
|------------|----------------|-----------------|------------|---------|-------|
| FM16 Mode | 16 | 16 | 2 | 1 | 35 |
| FM32 Mode | 32 | 16 | 2 | 1 | 51 |
| ALL64 Mode | 32 | 32 | Disable | Disable | 64 |

The maximum of enabling simultaneous sound generation with AL channel are described as follows.

| | AL | FM Synthesizer | PCM Synthesizer | Stream PCM | HV | Total |
|------------|---------|----------------|-----------------|------------|---------|-------|
| FM16 Mode | 1 | 15 | 15 | 2 | 1 | 34 |
| FM32 Mode | 1 | 31 | 15 | 2 | 1 | 50 |
| ALL64 Mode | Disable | 32 | 32 | Disable | Disable | 64 |

In PCM synthesizer, you can use your favorite sound as the maximum of 16 notes (**without AL channel**) by FM16/FM32 mode and the maximum of 32 notes (**with a size limitation**) by ALL64 mode by reading the sound file (**AIFF, WAVE**) of 16bitPCM (**encoding to 4bitADPCM**) or 8bitPCM (**encoding to 8bitPCM**), and by performing the frequency change, envelopes change, loop points setup, etc..

Event Viewer Function

This function allows confirming the event information on Score Window by reading SMF. In addition, it allows verifying the contents of SMF on “*Event List Window*” or “*Piano Roll Window*.” During a confirmation of the playback, “*Piano Roll Window*” advances synchronously. Furthermore, it allows performing an editing of music information.

Real Time Voice Editing Function

The read SMF data can be confirmed on “*Event Viewer*.” In a voice change, voice change in real time is possible.

Stream PCM Pasting Function

By using this function, StreamPCM files to perform a synchronized playback with channel sequence can be read and assigned. In addition, the exclusive data to applicable channels and applicable notes can be transmitted to MA-5 emulator when it is assigned. For the reasons, an editing and verification of Stream PCM can be performed easily by combining the external MIDI sequencer with MA-5 Authoring Tool.

AL Parameter Equip Function

Only for MA-5 Mode

The effect of filter is obtained by setting AL parameters in FM voices, PCM voices, and Noises.
(AL parameters cannot be used when AT-Mode is set to “*MA-3*” or FM Mode is set to “*ALL64 Mode*”.)

HV Creation & Editing Function

Only for MA-5 Mode

HV is an abbreviation for “*Humanoid Voice*.” In addition, the data which is a function to combine a script voice of MA-5 can be created and edited with this function. HV script can be created and a voice sound can be synthesized freely by this function. In addition, it is assignable so that it may synchronize with a channel sequence. Pastes, Move, Script edits, etc., are available on Piano Roll Window.

Moreover, changes of voice quality can be given by editing HV script, changing a word or intonations, and changing HV voices.

Realize the Various Sounds Easily by Using Voice Library

Voice Libraries (**VLF-MA3/VLP-MA3/VLP-MA5/VLA-MA5/VLW-MA3/VLD-MA3**) which are recorded various sounds are attached in this application.

- **“VLF-MA3”** is an extended voice library of FM voice, and it is able to extend voices which differ from default voices, easily.
- **“VLP-MA3”** and **“VLP-MA-5”** is the PCM voice library, and it can easily realize real sounds that differ from FM.
- **“VLA-MA5”** is the voice library with AL parameters; in addition, the sound which has the filter effect to FM voice and PCM voice can be used.
- **“VLW-MA3”** is the Ethnic Library; in addition, it can expand the sounds for the folk instruments.
- **“VLD-MA3”** is Decorator voice library. The sound of music can be variously changed by replacing a voice set.

By using these three voice libraries, the various sounds are easily realizable.
For details about the registration method of each voice libraries etc., see the manual attached with library.
(**VLF-MA3_v***.pdf**, **VLP-MA3_v***.pdf**, **VLP-MA5_v***.pdf**, **VLA-MA5_v***.pdf**,
VLW-MA3_v*.pdf**, **VLD-MA3_v***.pdf**)

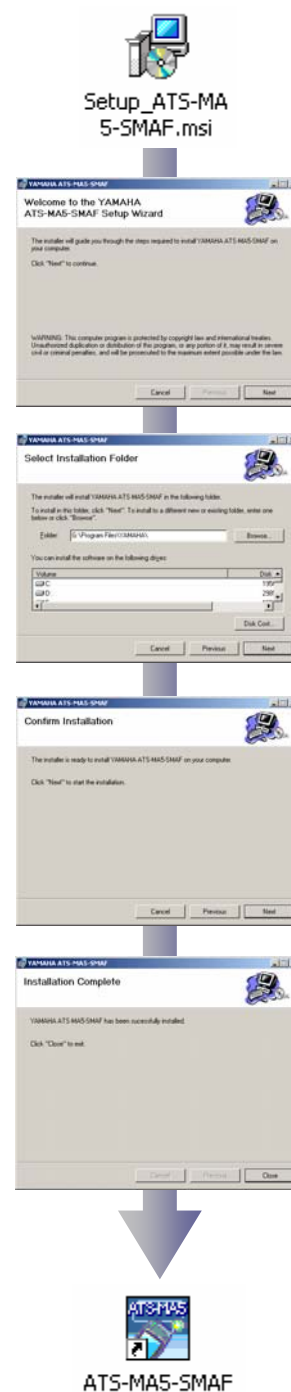
2. How to start up the MA-5 Authoring Tool?

This chapter describes the installation procedures for MA-5 Authoring Tool and steps to start up the MA-5 Authoring Tool.

2.1. Installation of MA-5 Authoring Tool

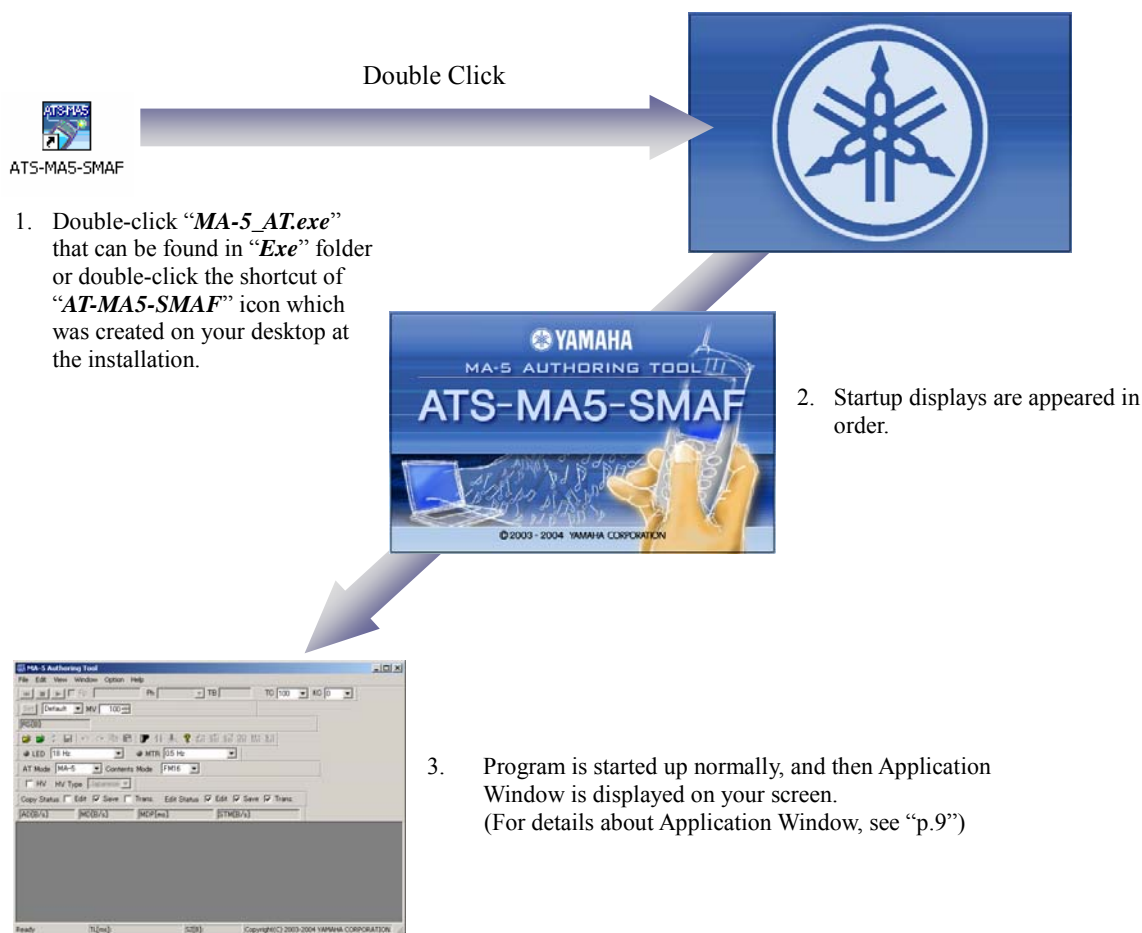
This section describes the installation procedures for MA-5 Authoring Tool.

1. Double click “*setup.exe*” icon.
2. “*Setup Wizard*” dialog is displayed.
3. Click “*Next*” on “*Setup Wizard*” dialog.
4. Then, “*Select Installation Folder*” dialog appears.
5. Select the folder in which the application will be installed. Then, press “*Next*.”
6. “*Confirm Installation*” dialog appears.
7. Select “*Next*”, then, installation is started. When the installation is completed, “*Installation Complete*” dialog is displayed.
8. Click “*Close*” on “*Installation Complete*” dialog.
9. Installation is now completed; in addition, a shortcut icon “*ATS-MA5-SMAF*” is also created on your desktop.



2.2. Start-up of Authoring Tool

After the installation of MA-5 Authoring Tool was completed, MA-5 Authoring Tool can be started up with the following procedures.



3. Reference

This chapter describes the names and functions of each window, bar, and menu which are provided in MA-5 Authoring Tool.

3.1. Application Window

Each edit windows are opened on this “**Application Window**.” This window provides “**Menu bar**”, “**Control bar**”, “**Volume bar**”, “**Report bar**”, “**Tool bar**”, “**Preference Bar**”, “**LED/MTR Bar**”, “**HV Bar**”, “**Content Information Bar**”, “**Density Report Bar**”, and “**Status bar**” that are applicable commonly to all edit windows. The Menu bar, Volume bar, Tool bar, Preference Bar, and Control Bar are used to select or execute various functions by clicking or dragging. In addition, Report Bar, Density Report Bar, and Status Bar show the present status.

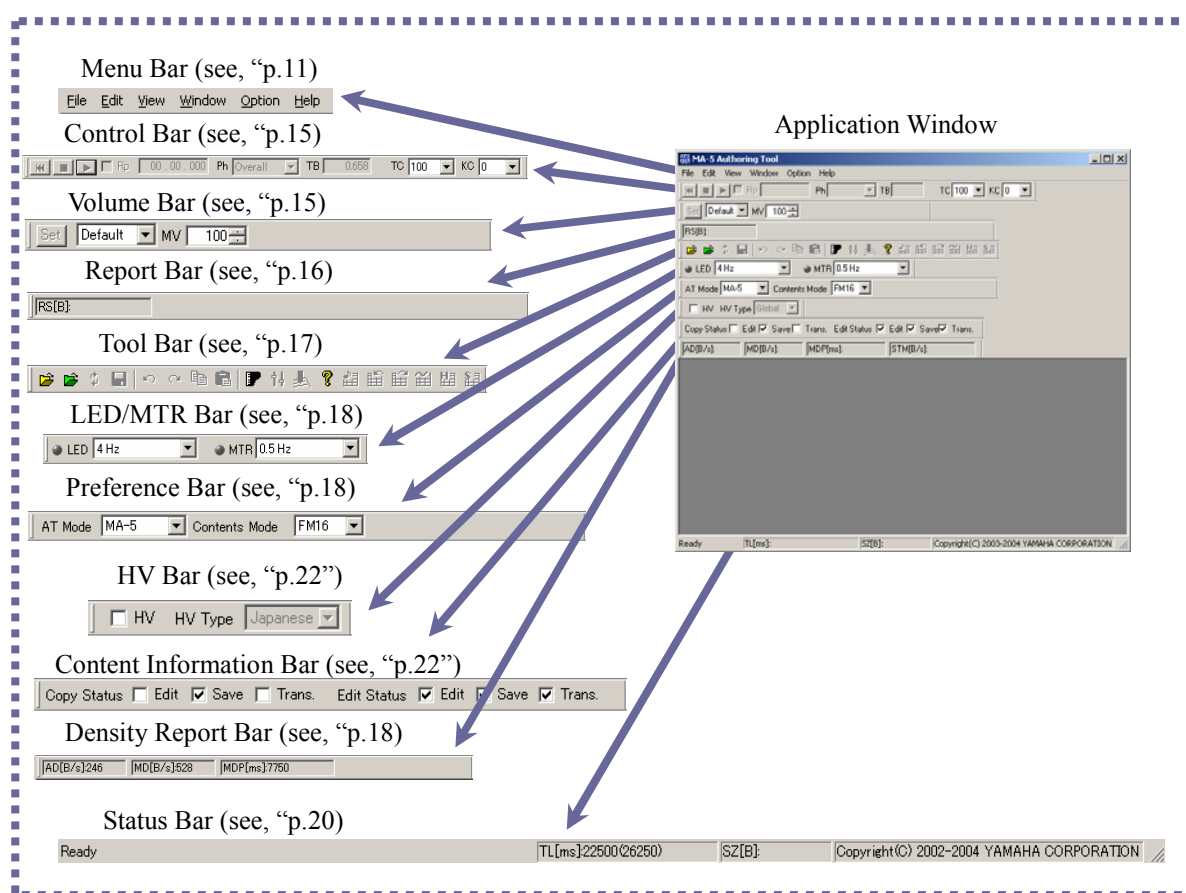


Figure. 3-1 Application Window

【Note】 The Control bar, Volume bar, Report bar, Tool bar, Preference Bar, LED/MTR Bar, HV Bar, Contents Information Bar, Density Report Bar, and Status Bar can be displayed or hidden as necessary.

【Note】 By clicking “View” menu on Menu bar, a pull-down menu is displayed. By clicking a name of Tool bar, Status Bar, Report Bar, Volume Bar, Preference Bar, LED/MTR Bar, HV Bar, Contents Information Bar, Density Report Bar, and/or Control Bar and placing a check, Tool bar, Status Bar, Report bar, Volume bar, Preference Bar, LED/MTR Bar, HV Bar, Contents Information Bar, Density Report and Control Bar are displayed on Application menu. Conversely, by clicking the name of Control bar, Volume bar, Report bar, Toolbar, Preference Bar, LED/MTR Bar, HV Bar, Contents Information Bar, Density Report Bar, and/or Status Bar once again, these windows are hidden from Application menu.

3.2. Title Bar

“**Title Bar**” on the “**Application Window**” displays the name and the location of a file which is presently opened in MA-5 Authoring Tool. The Title Bar of each “**Edit Window**” displays the name of each window. Functions provided by “**Title Bar**” are described as follows.

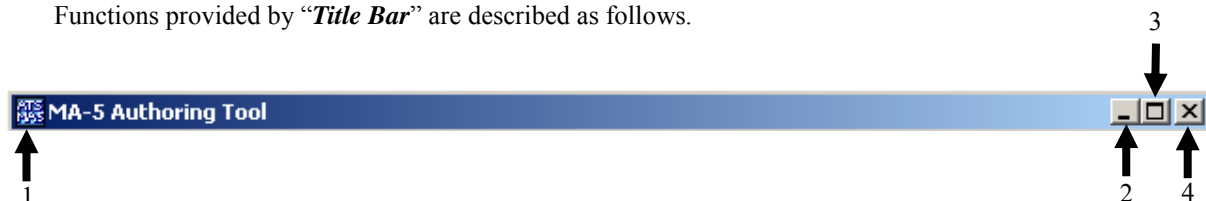


Figure. 3-2 Title Bar

| No. | Name | Description |
|-----|--|--|
| 1 | Application icon | By clicking this icon, System menu is opened. (For details, see “3.2.1 System Menu.”) |
| 2 | Minimize button | By clicking this button, windows are minimized (to make it an icon). |
| 3 | Maximize button/Undo (Minimize) button | By clicking this button, windows are maximized. Window is restored to the original size by clicking this button once again. |
| 4 | Close button | By clicking this button, windows are closed. In case of “ Application Window ”, windows are closed and application is also ended. In case of “ Edit Windows ”, each window is closed one by one. |

3.2.1. System Menu

By clicking the “**Application Icon**” located on the left end on “**Title Bar**”, this “**System Menu**” is opened. Function provided in this menu as follows.

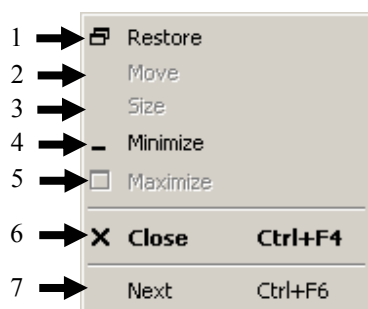


Figure. 3-3 System Menu

| No. | Name | Description |
|-----|--------------------------|--|
| 1 | Restore | When the size of window has been changed by size change etc., the window is restored to original size by clicking this function. |
| 2 | Move | Mouse pointer is changed to the moving tool by clicking this function. Use this pointer to move the windows by clicking & dragging the title bar of windows. The maximized windows cannot be moved. |
| 3 | Size | Mouse pointer is changed to the size-change tool. Put this pointer on the upper, lower, left and right side lines of the window, and clicks and drags the line to change the size of the window. The maximized window cannot be changed. |
| 4 | Minimize | Windows are minimized (to make it an icon) |
| 5 | Maximize | Windows are maximized. If the window is already maximized, this function cannot be selected. |
| 6 | Close (Alt+F4) (Ctrl+F4) | Windows are closed by clicking this function. In case of “ Application Window ”, all windows are closed and application is also ended. In case of “ Edit Window ”, each window is closed one by one. |
| 7 | Next (Ctrl+F6) | If multi-Edit Windows are opened on Application Window, a Window in active can be changed by clicking this button. This function is only available on the System menu of Edit Window. |

3.3. Menu Bar

In Menu Bar, the following menus are provided to execute and control various functions.

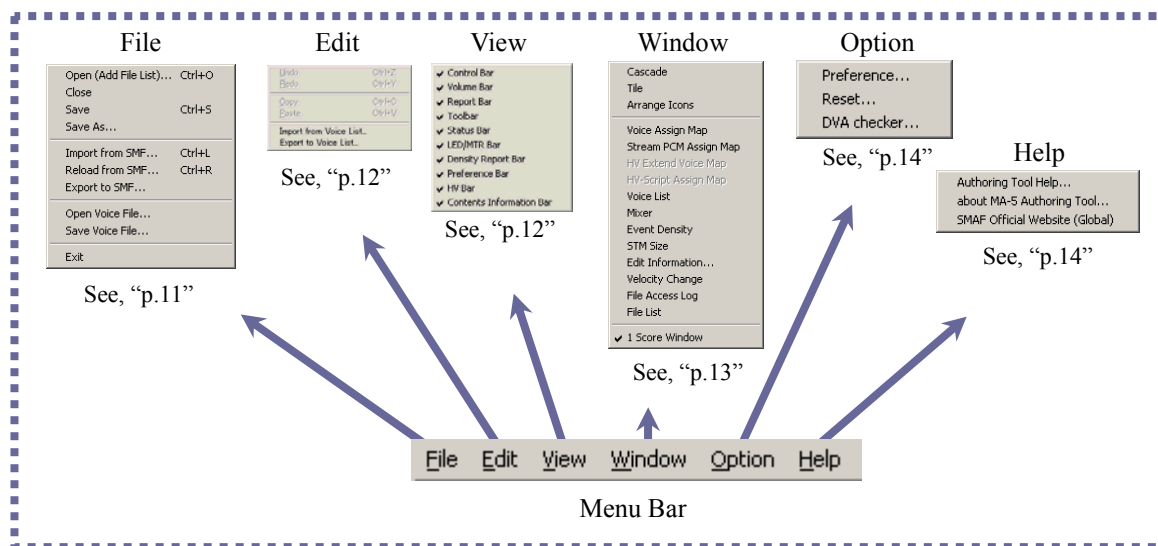


Figure. 3-4 Menu Bar

3.3.1. File Menu

A series of operation such as open, close, save, and end of files can be performed with this menu.

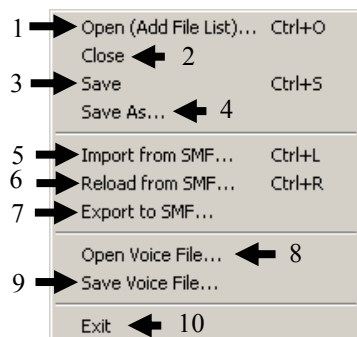


Figure. 3-5 File Menu

| No. | Function Name | Contents |
|-----|-------------------------------------|---|
| 1 | Open (Add File List)... (Ctrl+O) | Opens a SMAF file into File List Window. (*.mmf) MA-3 Mode Opens a SMAF/MA-3 file. MA-5 Mode Opens a SMAF/MA3 and SMAF/MA5 file. |
| 2 | Close | Closes a SMF file (*.mid) / SMAF (*.mmf) |
| 3 | Save (Ctrl+S) | Saves a file in SMAF file format. (*.mmf) MA-3 Mode Saves as a SMAF/MA-3 file. MA-5 Mode Saves as a SMAF/MA-5 file. |
| 4 | Save As... | Saves a SMAF file with another name. (*.mmf) MA-3 Mode Saves as a SMAF/MA-3 file. MA-5 Mode Saves as a SMAF/MA-5 file. |
| 5 | Import From SMF... (Ctrl+L) | Loads a SMF file. (*.mid) |
| 6 | Reload from SMF... (Ctrl+R) | Reloads a SMF file (*.mid). |
| 7 | Export to SMF... | Saves a file in SMF format (*.mid) Only the events described in the "SMF Authoring Guideline" is output. Even the file which does not contain note-events allows to be saved. |
| 8 | Open Voice File | Loads a MA-3 voice file (*.vm3) and MA-5 voice file (*.vm5). MA-3 Mode Loads a MA-3 voice file (*.vm3). MA-5 Mode Loads a MA-3 voice file (*.vm3) and MA-5 voice file (*.vm5). |
| 9 | Save Voice File | Saves a file in MA-3/MA-5 voice file format (*.vm3/.vm5). MA-3 Mode Saves a file in MA-3 voice file format (*.vm3). MA-5 Mode Saves a file in MA-3/MA-5 voice file format (*.vm3/.vm5). |
| 10 | Exit | Exists from MA-5 Authoring Tool. |

【Note】 File which does not include any note-event considers as an error; in addition, they can not be saved.

【Note】 Even a file does not include any note-event; it can be saved with "Export to SMF..." function.

3.3.2. Edit Menu

A series of operation such as undo, redo, copy and paste can be performed with this menu.



Figure. 3-6 Edit Menu

| No. | Function Name | Contents |
|-----|---------------------------|---|
| 1 | Undo (Ctrl+Z) | In Voice Assign Map, the voice parameter updated by paste operations is returned to the parameter before the operation. |
| 2 | Redo (Ctrl+Y) | The voice parameter updated by Undo operation is returned to the parameter before the operation. |
| 3 | Copy (Ctrl+C) | Copies voices which is selected in the Voice List or Voice Assign Map. When nothing is selected, it is displayed with gray color. |
| 4 | Paste (Ctrl+V) | Pastes the copied voices on the designation locations of Voice list or Voice Assign Map. |
| 5 | Import from Voice List... | When the voice is registered in Voice Assign Map, the voice specified by Bank (<i>M/L</i>) and Pch# is stuck into Voice Assign Map from Voice List. |
| 6 | Export to Voice List... | When the voice is registered in Voice Assign Map, the voice specified by Bank (<i>M/L</i>) and Pch# is stuck into Voice List from Voice Assign Map. |

3.3.3. View Menu

Each bar is displayed and/or hidden from Application Window by left clicking on the name of each bar to place/replace a check mark. Check mark is displayed to the menu by which function has been activated. For details about each function in View Menu, see the following table.

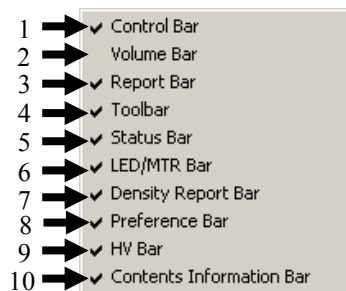


Figure. 3-7 View Menu

| No. | Function Name | Contents |
|-----|--------------------------|--|
| 1 | Control Bar | Switches a display/non-display of Control Bar. (For details, see “ 3.4Control Bar ”) |
| 2 | Volume Bar | Switches a display/non-display of Volume Bar. (For details, see “ 3.5Volume Bar ”) |
| 3 | Report Bar | Switches a display/non-display of Report Bar. (For details, see “ 3.6Report Bar ”) |
| 4 | Tool Bar | Switches a display/non-display of Toolbar. (For details, see “ 3.7Tool Bar ”) |
| 5 | Status Bar | Switches a display/non-display of Status Bar. (For details, see “ 3.13Status Bar ”) |
| 6 | LED/MTR Bar | Switches a display/non-display of LED/MTR Bar. (For details, see “ 3.8LED/MTR Bar. ”) |
| 7 | Density Report Bar | Switches a display/non-display of Density Report Bar. (For details, see “ 3.12Density Report Bar ”) |
| 8 | Preference Bar | Switches a display/non-display of Preference Bar. (For details, see “ 3.9Preference Bar ”) |
| 9 | HV Bar | Switches a display/non-display of HV Bar. (For details, see “ 3.10HV Bar ”) |
| 10 | Contents Information Bar | Switches a display/non-display of Contents Information Bar. (For details, see “ 3.11Contents Information Bar ”) |

3.3.4. Window Menu

In Window menu, display/non-display arrangement of each window can be controlled. By placing a check on the name of each window, windows are opened on Application Window. Check mark is displayed to the menu by which function has been activated. For details about each function in Window Menu, see the sections for each window. In addition, windows and dialogs displayed on “*Application Window*” can be arranged by selecting “*Cascade*”, “*Tile*”, and/or “*Arrange Icons*.”

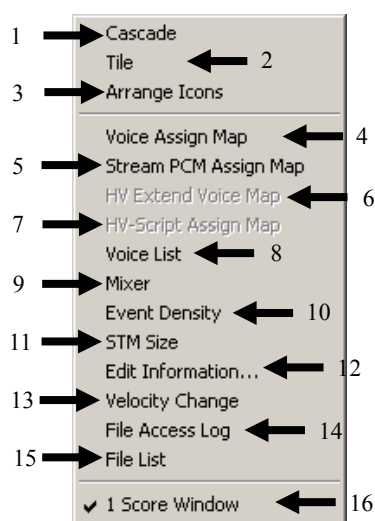


Figure. 3-8 Window Menu

| No. | Function Name | Contents |
|-----|-----------------------|--|
| 1 | Cascade | Displays windows in piles. |
| 2 | Tile | Displays windows in a line. |
| 3 | Arrange Icons | Arranges the minimized windows on the bottom of “ <i>Application Window</i> .” |
| 4 | Voice Assign Map | Displays Voice Assign Map. (For details, see “ <i>4.4Voice Assign Map</i> .”) |
| 5 | Stream PCM Assign Map | Displays Stream PCM assign map. (For details, see “ <i>4.5StreamPCM Assign Map</i> .”) |
| 6 | HV Extend Voice Map | <u><i>This function becomes available only at MA-5 Mode.</i></u> Displays HV Extend Voice Map. (For details, see “ <i>4.6HV Extend Voice Map</i> .”) |
| 7 | HV-Script Assign Map | <u><i>This function becomes available only at MA-5 Mode.</i></u> Displays HV-Script Assign Map. (For details, see “ <i>4.7HV-Script Assign Map</i> .”) |
| 8 | Voice List | Displays Voice list. (For details, see “ <i>4.3Voice List Window</i> .”) |
| 9 | Mixer | Displays Mixer Window. (For details, see “ <i>4.9Mixer</i> .”) |
| 10 | Event Density | Displays Event Density window (For details, see “ <i>4.10Event Density</i> .”) |
| 11 | STM Size | Displays STM size dialog. (For details, see “ <i>4.11STM Size</i> ”) |
| 12 | Edit Information | Displays management information dialog. (For details, see “ <i>4.13Edit Information</i> .”) |
| 13 | Velocity Change | Displays Velocity Change dialog. (For details, see “ <i>4.12Velocity Change</i> .”) |
| 14 | File Access Log | Displays File Access Log window. (For details, see “ <i>4.14File Access Log</i> .”) |
| 15 | File List | Displays SMAF File List window. (For details, see “ <i>4.1File List Window</i> .”) |
| 16 | List of Windows | Lists the windows currently opened in Application Window. In addition, a window currently active is shown with checked mark as shown like in figure. Moreover, the selected window will become an active condition if optional windows are chosen from a list. |

3.3.5. Option Menu

In “**Option Menu**”, basic operation-environment for working on Authoring Tool, etc. can be set up. For details, see the section for each function.

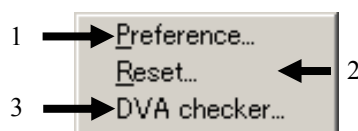


Figure. 3-9 Option Menu

| No. | Function Name | Contents |
|-----|---------------|---|
| 1 | Preference | Opens preference dialog. (For details, see “ 4.15Preference. ”) |
| 2 | Reset | This function is not available. |
| 3 | DVA Checker | DVA checker window is opened, and then the maximum number of pronunciation in data can be checked. (For details, see “ 4.16DVA Checker ”) |

3.3.6. Help Menu

In “**Help Menu**”, following functions which supports user's operations are provided. For details, see the following sections for each function.

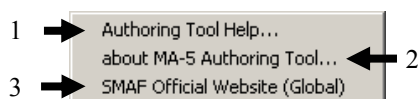


Figure. 3-10 Help Menu

| No. | Function Name | Contents |
|-----|---------------------------|---|
| 1 | Authoring Tool Help... | Displays “ MA-5 Authoring Tool User's Manual. ” |
| 2 | about MA-5 Authoring Tool | Displays “ about MA-5 Authoring Tool. ” (For details, see “ 4.17about Authoring Tool. ”) |
| 3 | SMAF Official Website | URL http://smaf-yamaha.com/ |

3.4. Control Bar

Control Bar is a functional group to display or control the contents of data which was converted from SMF file (*.mmf). A series of operation from playback to stop of data can be performed by checking the musical piece data. Descriptions about each functions, see the following table. For details, see the following table.

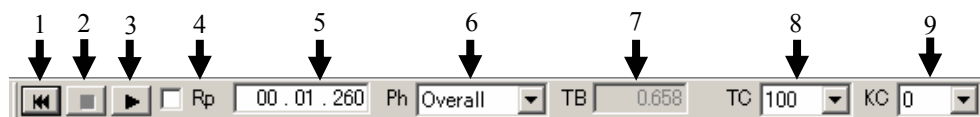


Figure. 3-11 Control Bar

| No. | Function Name | Contents |
|-----|-----------------------------|---|
| 1 | Rewind | Playback bar is moved to the head of music. |
| 2 | Stop | Playback of music is stopped. |
| 3 | Play | Playback of music is started. |
| 4 | Repeat (Rp) | Repeat is designated. |
| 5 | Playback Position Indicator | Playback position is displayed. Arbitrary values can be input directly. Display unit is " <i>ms.</i> " |
| 6 | Phrase List (Ph) | Select a phrase list to be an object for playback. Change of playback mode is available. When " <i>Overall</i> " is selected, a music is played from head to end, and if " <i>Partial</i> " is selected, a music only a section specified by marker is played. For details about the specification of marker, see " <i>Contents Authoring Guideline For MA-5 Authoring System.</i> " |
| 7 | TimeBase (TB) | Time base is displayed. It displays a time about 1Tick in " <i>ms</i> " unit. |
| 8 | Tempo Control (TC) | Tempo control is displayed. Tempo value set in the read data is possible to be changed and played back by " <i>70% - 130%</i> " of a rate. Default is " <i>100.</i> " |
| 9 | Key Control (KC) | Displays the key control, which can be changed from " <i>+12 to -12.</i> " Default is " <i>0.</i> " Only the channel which uses the tone of a normal bank receives key control. The channel which uses the tone of a drum bank does not receive key control. |

【Note】 The Repeat setup, Playback mode change of Phrase List, Tempo Control Setup, and Key Control setup becomes valid only when Authoring tool is used, and does not reflect to SMAF files. Time base is displayed per 1Tick in (*ms*) unit.

3.5. Volume Bar

Volume bar is a function to set the playback volume, speed, height of key, etc. of musical pieces in MA-5 Authoring Tool.

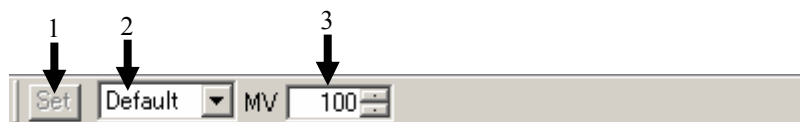


Figure. 3-12 Volume Bar

| No. | Function Name | Contents |
|-----|--------------------|---|
| 1 | Set | Possible to memorize a five set of volume as maximum. If this button is clicked in case of the name of memory domain whichever "A" to "E" is shown in the selection box, the present setting value is memorized into a range of domain. "Default" is set as "MV=100", and can not memorize the other values. |
| 2 | Setting | Selecting a memory area. Sets memorized master volume. |
| 3 | MV (Master Volume) | Displays the master volume value input right before the head of note message. When the SMF which is not set the master volume (Universal Real Master Volume) is Imported/Reloaded , the master volume value input just before the head of note message is displayed. When the SMF is Imported/Reloaded , the value of last saved MV by "Set" button operation is set up. Arbitrary values can be input directly. |

3.6. Report Bar

In "Report Bar", RAM size used in music is displayed. Unit is "Byte."



Figure. 3-13 Report Bar

| No. | Function Name | Contents |
|-----|---------------|--|
| 1 | RS (RAM Size) | Total RAM Size in music is displayed by byte unit. |

| RAM Size Check Timing | |
|--|--|
| When "OK" button of VoiceEdit dialog is clicked. | |
| In case of SMF Import | |
| In case of SMF Reload | |
| In case of performing a "Voice Paste" to Voice Assign Map. | |
| In case of import from Voice List | |
| When "OK" of Preference is selected. | |
| When changing "HV" setting on "Score Window." | |
| When changing the "Reserve" settings on Piano Roll/Stream PCM Edit View. | |

3.6.1. About RAM Size

In this section, RAM size in both case “**MA-3 mode**” and “**MA-5 mode**” are described.

MA-3 Mode

The total RAM size of MA-3 is 8176-Byte, and thus, if it exceeds the capacity, it cannot playback the music. Authoring Tool calculates the used RAM size in music, in addition, if it exceeds 8176-Byte, an error message will be output.

MA-5 Mode

The total RAM size of MA-5 is 8192-byte, and thus, if it exceeds the capacity, it cannot play back the music. Authoring Tool calculates the used RAM size in music, in addition, if it exceeds 8192-bytes, an error message will be output. Size calculation serves as the following sum totals.

| Size List | |
|---|--|
| Registration of Voice Parameter | FM2op : 16 bytes / one voice FM4op : 30 bytes / one voice PCM : 14 bytes / one voice |
| Registration of AL Parameter | AL+FM2op : 16 bytes / one voice AL+FM4op : 30 bytes / one voice AL+PCM : 14 bytes / one voice AL+Noise : 14 bytes / one voice |
| Registration of PCM Voice Waveforms | Bytes number in data section (1 byte will be added if it is an odd number.) / one waveform |
| Registration of FM Fundamental Waveform | 2048 byte / one waveform |
| Registration of Stream PCM Waveform | When not used (No Reserved) / 0 byte When max. number of voices sound generation number is “1.” (1 Voice Reserved) / 1024 bytes When max. number of voices sound generation number is “2.” (2 Voice Reserved) / 2048 bytes |

【Note】 A warning message is displayed when the value of RAM size exceeds the followings; moreover, the background color is displayed by blinking original color and red.

- **MA-3 Mode: 8176byte**
- **MA-5 Mode: 8192byte**

3.7. Tool Bar

Tool Bar contains a series of functions which are also provided in “*File Menu*”, “*Edit Menu*”, etc.

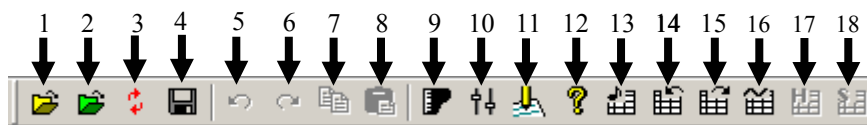


Figure. 3-14 Tool Bar

| No. | Function Name | Contents |
|-----|------------------------|---|
| 1 | Open (Add File List) | Registers a SMAF file into file list. Opens the SMAF file (*.mmf) |
| 2 | Import from SMF | Imports a SMF (*.mid). Refer to the following “ <i>Note.</i> ” |
| 3 | Reload from SMF | Reloads a SMF (*.mid). |
| 4 | Save | Saves a SMAF file (*.mmf). |
| 5 | Undo | Voice data paste is undone. |
| 6 | Redo | Voice data paste is redone. |
| 7 | Copy | Copies a voice data. |
| 8 | Paste | Pastes a voice data. |
| 9 | Voice List | Displays the Voice List Window. (For details, see “ <i>4.3Voice List Window.</i> ”) |
| 10 | Mixer | Displays the Mixer Window. (For details, see “ <i>4.9Mixer.</i> ”) |
| 11 | Information | Displays the Information Window. (For details, see “ <i>4.13Edit Information.</i> ”) |
| 12 | Help | Opens the “ <i>MA-5 Authoring Tool User’s Manual.</i> ” |
| 13 | Voice Assign Map | Displays the Voice Assign Map. For details, see “ <i>4.4Voice Assign Map.</i> ”) |
| 14 | Import from Voice List | Imports voices with the same bank number and the same voice number to the voice list in the Voice Assign Map. |
| 15 | Export to Voice list | Exports voices with the same bank number and the same voice number from the voice list in the Voice Assign Map. |
| 16 | Stream PCM Assign Map | Displays Stream PCM Assign Map. (For details, see “ <i>4.5StreamPCM Assign Map.</i> ”) |
| 17 | HV Extend Voice Map | Displays the HV Extend Voice Map. (For details, see “ <i>4.6HV Extend Voice Map.</i> ”) |
| 18 | HV-Script Assign Map | Displays the HV-Script Assign Map. (For details, see “ <i>4.8HV-Script Edit Window</i> ”) |

【Note】 It is only applicable for “*SMF Format 0*” and “*SMF Format 1.*”

3.8. LED/MTR Bar

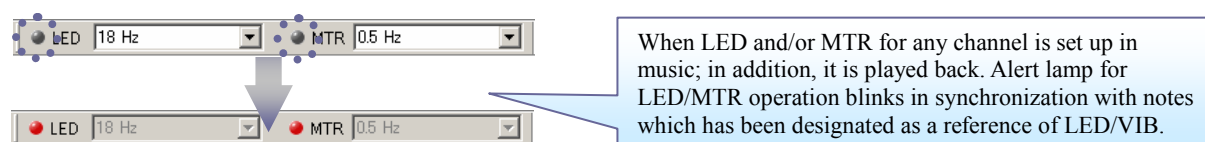
LED/MTR status returned by polling which opposes to Emulator can be displayed and set up with this bar.



Figure. 3-15 LED/MTR Bar

| No. | Name | Description |
|-----|------|--|
| 1 | LED | Sets the blinking frequency of LED. The frequency of polling is 0.1sec. One of “ <i>Default (No Blink)</i> ”, “ <i>18Hz</i> ”, “ <i>16Hz</i> ”, “ <i>12Hz</i> ”, “ <i>8Hz</i> ”, or “ <i>4Hz</i> ” is selectable. |
| 2 | MTR | Sets the blinking frequency of MTR. The frequency of polling is 0.1sec. One of “ <i>Default (No Blink)</i> ”, “ <i>2.25Hz</i> ”, “ <i>2.0Hz</i> ”, “ <i>1.5Hz</i> ”, “ <i>1.0Hz</i> ”, or “ <i>0.5Hz</i> ” is selectable. |

Confirmation alert lamp of LED/MTR operation capabilities



[Note] This is an operation which is valid only on Authoring Tool environment. This setting is not reflected to SMAF data.

3.9. Preference Bar

This is a dialog bar to set the MA-5 Authoring Tool operation environments.

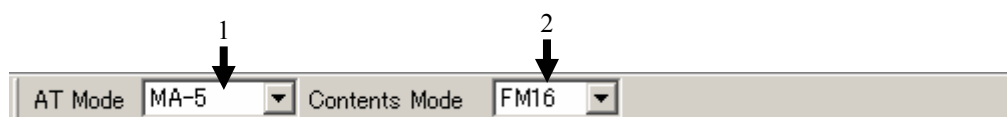


Figure. 3-16 Preference Bar

| No. | Function Name | Contents |
|-----|---------------|--|
| 1 | AT Mode | Switches the mode of Authoring Tool. For details, see “ <i>4.15Preference.</i> ” |
| 2 | Contents Mode | Switches FM mode. When a music-data is loaded in Authoring Tool, FM mode can not be changed. In that case, be sure to close the file once, and then reset the contents mode. <i>FM16 Mode</i> This is a mode to generate 16-tone by using 2-operator/4-operator voices and PCM voice. <i>FM32 Mode</i> This is a mode to generate 32-tone by using 2-operator voices and PCM voice. <i>ALL64 Mode</i> This is a mode to generate 32-tone by using 2-operator voice as FM section and generate 32-tone as PCM section. |

3.10. HV Bar

This is a bar to turn on/off the HV function.

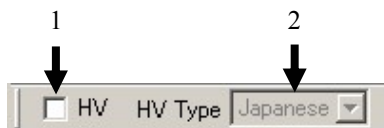


Figure. 3-17 HV Bar

| No. | Name | Description |
|-----|--------------|--|
| 1 | HV Check Box | By placing a check in the box, HV data becomes creatable and editable. |
| 2 | HV Type | Displays the languages stand on Operation System. |

3.11. Contents Information Bar

Setting of SMAF file (editable/un-editable) can be set and controlled with this Bar.

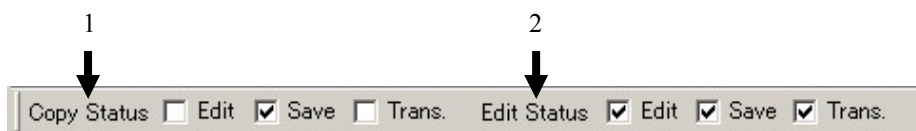


Figure. 3-18 Contents Information Bar

| No. | Name | Description |
|-----|-------------|--|
| 1 | Copy Status | Copy status can be set up. For details about Copy Status, see “ <i>4.15Preference.</i> ” |
| 2 | Edit Status | Edit status can be set up. For details about Edit Status, see “ <i>4.15Preference.</i> ” |

3.12. Density Report Bar

This bar shows the event density information in music data.



Figure. 3-19 Density Report Bar

| No. | Function Name | Contents |
|-----|----------------------------|---|
| 1 | AD (Average Density) | Converts the event density in the read music, which put through one music, to MIDI byte numbers; and then, it is displayed. The unit is " Byte/sec. " (One musical note is counted as 6-Byte.) |
| 2 | MD (Max Density) | Displays the event density per unit, which is the highest in one music. The unit is " Byte/sec. " |
| 3 | MDP (Max Density Position) | Displays the position which has the highest event density in music. The unit is " ms. " |
| 4 | STM (Stream PCM) | Displays the maximum unit byte number in Stream PCM. |

【Note】 When the value of Average Density exceeds "**500 byte/s.**" warning is displayed and the "**AD**" column of "**Status Bar**" blinks in red.

【Note】 When the value of Max Density exceeds "**1000 byte/s.**" warning is displayed and the "**MD**" column of "**Status Bar**" and the "**MDP**" column blink in red.

【Note】 While one of the "**AD**", "**MD**" or "**MDP**" is blinked in red, it cannot save as a SMAF file.

3.12.1. Calculation Method of Event Density

The size consumed by MIDI event is differed. When an error comes out by event density, it is necessary to cut the event in reference to "**4.10Event Density.**"

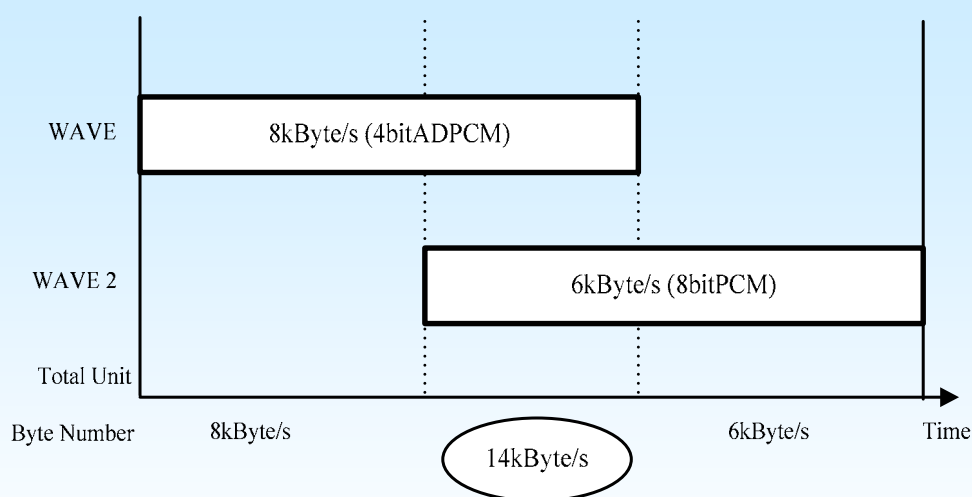
| The number of consumption bytes of a MIDI event | |
|---|--|
| Note Event | 6Byte |
| Control Chan | 3Byte |
| Program Change | 2Byte |
| Pitch bend | 3Byte |
| Exclusive Message | Byte in Data Section + 2 (F0, F7) Byte |

3.12.2. STM Display (the Maximum Stream PCM Unit Bytes Number)

As for the number of maximum Stream PCM unit bytes (the amount of data per second), it is displayed on SMAF form by the status bar only at the time of save. It cannot save, if the number of maximum Stream PCM unit bytes is exceeded. The restriction of the number of maximum Stream PCM unit bytes serves as 12kByte/s by MA-5 and 8kByte/s by MA-3. In case a sound file is used as a Stream PCM data, it is necessary to restrict the number of maximum Stream PCM unit bytes.

Therefore, it is necessary to convert the sampling frequency of a sound file to the number of Stream PCM unit bytes " $1\text{kHz}=1\text{kByte/s}$ ", and use the sound file to fit in the restriction range. Refer to the following example for the calculation method of the number of unit bytes.

"Example" When 4bitADPCM of $F_s=16\text{kHz}$ and 8bitPCM of $F_s=6\text{kHz}$ are



Conversion is made as described below.

Unit byte number/4bit ADPCM waveform " $k\text{Bytes/s}$ " \leftarrow Sampling frequency F_s " $k\text{Hz}$ " / 2

Unit byte number/8bit ADPCM waveform " $k\text{Bytes/s}$ " \leftarrow Sampling frequency F_s " $k\text{Hz}$ "

In the above-mentioned example, in the time zone when playbacks of two waveforms has overlapped, since it is set to 14-kByte/s, it cannot be saved.

3.13. Status Bar

In “*Status Bar*”, current status information of tool, contents information, etc. are displayed.

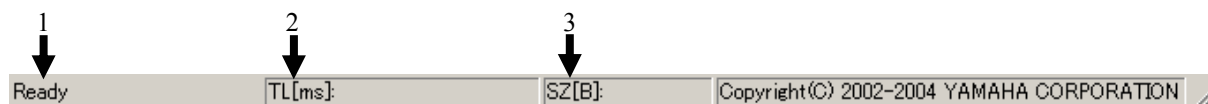


Figure. 3-20 Status Bar

| No. | Function Name | Contents |
|-----|-------------------|---|
| 1 | Status Display | Displays the simple explanation about each buttons and functions in the position where the mouse is pointing. When nothing is pointed out, it shows “ <i>Ready</i> .” |
| 2 | TL (Total Length) | Displays the “ <i>Actual Playing Total Time (end position)</i> ” in the read music. The unit is “ <i>ms.</i> ” The actual playing total time is the time from Start Point to Stop Point. The end position is displayed with Tick count from the head. |
| 3 | SZ (Size) | Displays the size of SMAF when file is saved in SMAF format (* <i>mmf</i>), or when SMAF is read. |

4. Description of each Window

This chapter describes the names and functions of each window provided in MA-5 Authoring Tool.

4.1. File List Window

SMAF files can be loaded into this window as a list.

If one of SMAF file loaded into File List Window is selected; in addition, “*Play*” in “*Control Bar*” is pressed, “*Direct Play*” is performed.

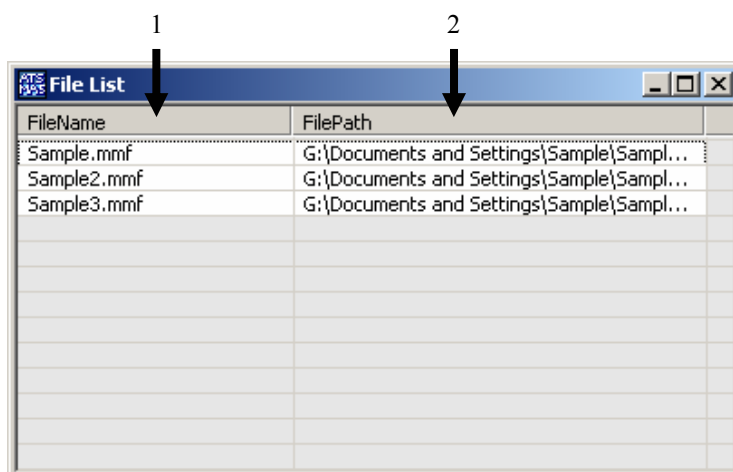


Figure. 4-1 File List Window

| No. | Function Name | Contents |
|-----|---------------|---|
| 1 | File Name | Displays a file name of loaded SMAF file. (*.mmf) |
| 2 | File Path | Displays a file pass of loaded SMAF file. (*.mmf) |

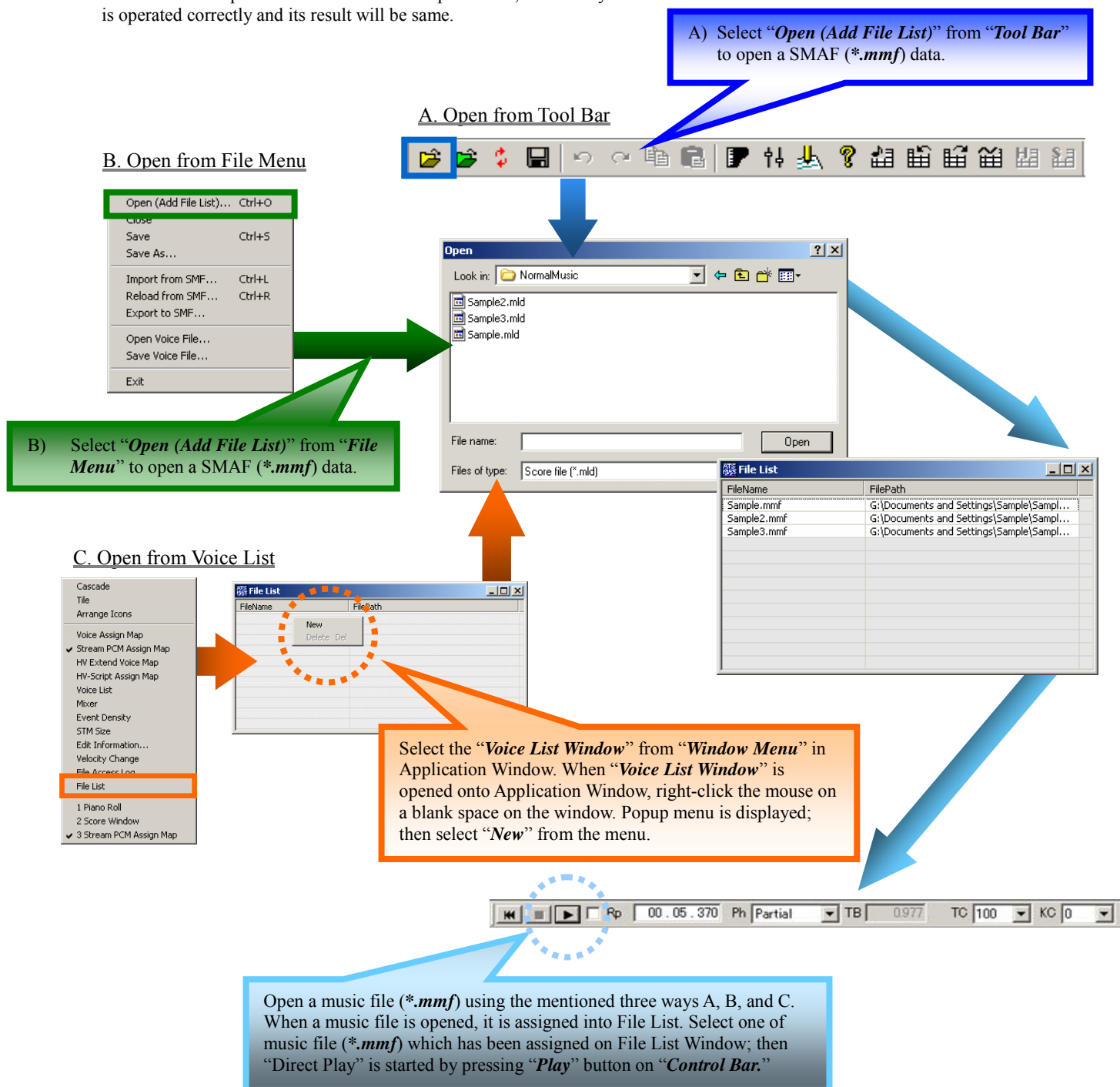
4.1.1. Direct Play

This section describes the procedure of how to play back a SMAF (*.mmf) using Direct Play function in MA-5 Authoring Tool.

Direct Play (Procedure of Playback a SMAF Data)

There are three ways to operate a Direct Play.

No matter which procedure was selected and performed, Direct Play is operated correctly and its result will be same.



4.2. Score Window

Score Window is a window to display the data content of read SMF (*.mid) or SMAF File (*.mmf).

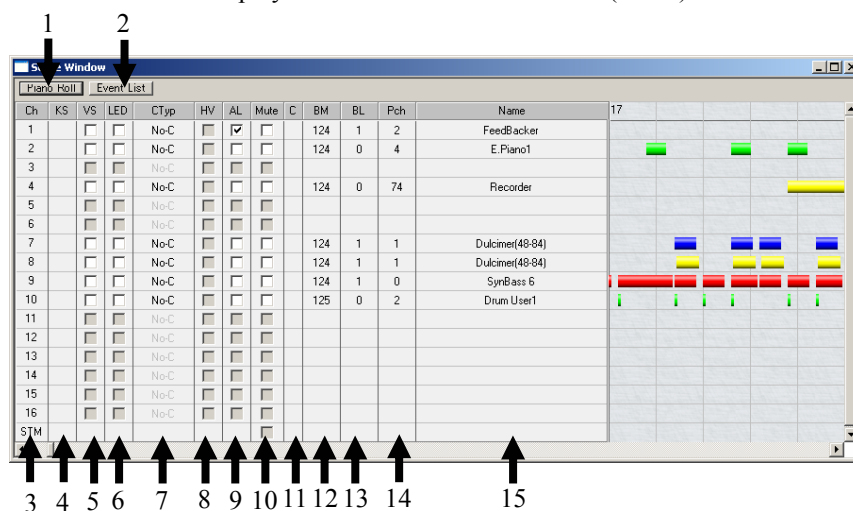


Figure. 4-2 Score Window

| No. | Function Name | Contents |
|-----|-------------------------|---|
| 1 | Piano Roll | Displays the contents read into "Score Window" on "Piano Roll Window." |
| 2 | Event List | Displays the data read into "Score Window" on "Event List Window." |
| 3 | CH | Shows channel numbers. |
| 4 | KS (Key Control Status) | MA-5 Mode Displays the Key control status. Only the channel set as HV channel can be set up. When Key Control is set up, it specifies whether Key Control is performed or not to HV channel. Key Control becomes effective by setting a check into a box. |
| 5 | VS (Vibration Status) | Designates whether Vibration Control is performed synchronizing with the data of applicable channel or not. Placing a check in the box to enable a Vibration. For VS setting of Stream PCM, refer to the following term "4.2.2VS and LED for StreamPCM". |
| 6 | LED | Designates whether LED Control is performed synchronizing with the data of applicable channel or not. Placing a check in the box to enable LED. For LED setting of Stream PCM, refer to the following term "4.2.2VS and LED for StreamPCM". |
| 7 | Ctyp (Channel Type) | Designates Channel Type for applicable channel. Clicking on the column of Ctyp of each channel changes the content as No-C, Melo, No-M and Ryh in this order. |
| 8 | HV | MA-5 Mode By placing a check in this box, the channel can be set for HV channel. It is not displayed when HV check box of "Preference" is not checked. (For details about HV check box, see "4.15Preference." In addition, Channel (CH) which does not contain even one note can not be set as HV channel. Sets this HV, before the following AL voice channel setting. |
| 9 | AL (Analog Like) | MA-5 Mode By placing a check in this box, the channel can be set for AL voice channel. All voices of channel that has been set for AL voice channel become monophonic voices. After placing a check in the box of AL, and double-clicks any voice in voice assign map; in addition, places a check in the "Enable AL" of AL Voice Edit, and then, the effect of AL parameters can be obtained. |
| 10 | Mute | Mutes the channel by placing a check in the relevant channel. This setting is not reflected to SMAF file. |
| 11 | C (Change Flag) | If the result shows difference when compared with voices that has the same bank number and voice number in the Voice List, a blue circle is displayed. When any of voices, which are different from the voice list in the relevant channel, exists, a blue circle is displayed. |
| 12 | BM (Bank Select MSB) | Displays BankSelect MSB at the head of voice. |
| 13 | BL (Bank Select LSB) | Displays BankSelect LSB at the head of voice. |
| 14 | Pch (Program Change) | Displays program change number at the top of voice. |
| 15 | Name | Displays name of voice at the head of voice. When a voice name is double-clicked, Voice Edit window will open. (Voice Edit window of built-in ROM voices cannot be opened.) |

4.2.1. Piano Roll Window

Displays the content of music data which was read into the “*Score Window*” on “*Piano Roll Window*.”

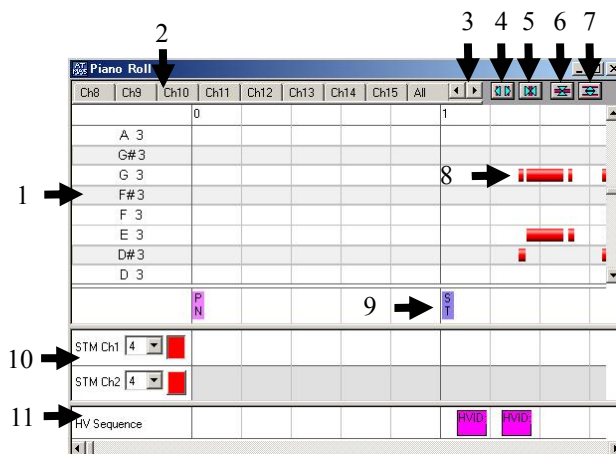


Figure. 4-3 Piano Roll Window

| No. | Function Name | Contents |
|-----|------------------------------|---|
| 1 | Interval Display | Displays the intervals of “ <i>Piano Roll Window</i> .” |
| 2 | [Ch1~16] and [All] part tabs | By clicking each tab, a part to display on “ <i>Piano Roll Window</i> ” can be changed. |
| 3 | Scroll buttons | A part tab scrolls from side to side. Un-displayed part tab can be displayed. |
| 4 | Horizontal zoom-in button | By clicking, the display size of window can be enlarged horizontally. |
| 5 | Horizontal zoom-out button | By clicking, the display size of window can be decreased horizontally. |
| 6 | Vertical zoom-in button | By clicking, the display size of window can be enlarged vertically. |
| 7 | Vertical zoom-out button | By clicking, the display size of window can be decreased vertically. |
| 8 | Note bar | Displays intervals and gate time of each MIDI note. |
| 9 | Controller display | Displays control change or pitch bend that are inputted in each part. |
| 10 | Stream PCM Edit View | Assign of “ <i>StreamPCM</i> ” can be performed. |
| 11 | HV Sequence Edit View | <p>Displaying, Assignment, and editing of HV-Script can be performed. By dragging and dropping the HV-Script Data (HV-Script ID) from HV-Script Assign Map Window onto this truck, HV note can be registered as made a drop position into the head (left-end).</p> <p><u>* However, in order to use this function, it is necessary to set a channel (CH) that includes at least one NOTE as HV specification. Be sure to insert at least one NOTE into a channel (CH) which is used for HV when creating a SME.</u></p> |

4.2.2. VS and LED for StreamPCM

The “*Channel Status Window*” is displayed by clicking the check box of “*VS*” or “*LED*” on the STM field of “*Score Window*.” “*VS*” and “*LED*” can be set to the channel into the note which plays Stream PCM is input.

Procedures of LED/VS Setting for StreamPCM

Open “*StreamPCM Assign Map*” from Window Menu in Menu Bar. Click “*StreamPCM Assign Map*” on Window Menu; then, *StreamPCM Assign Map* Window is opened on Application Window.

The state where WaveFile is not assigned on StreamPCM.

This is a state of which any Wave File (*.wav) is not assigned on “*StreamPCM Assign Map*.” In order to active LED/MTR function for StreamPCM, at least one Wave File has to be assigned on this window.

Right-click the mouse on a blank space; then, popup menu “*New/Delete*” is appeared. Select “*New*” and then, “*Open*” dialog is opened. Select one of Wave file from your list and assign it into “*StreamPCM Assign Map*.”

Procedures of how to assign the defined Wave file (*.wav) into SMF (*.mid) is described later in this document specifically. Now, StreamPCM function becomes active. Click the mouse on StreamPCM “*LED/VS*” section; then *Channel Status* Window is opened on Application Window finally.

Score Window

| Ch | KS | VS | LED | CType | AL | Mute | C | BM | BL | Pch | Name |
|-----|----|----|-----|-------|----|------|---|-----|----|-----|------------|
| 5 | | | | No-C | | | | | | | |
| 6 | | | | No-C | | | | | | | |
| 7 | | | | No-C | | | | 124 | 1 | 1 | BrtePno |
| 8 | | | | No-C | | | | 124 | 1 | 1 | BrtePno |
| 9 | | | | No-C | | | | 124 | 1 | 0 | GrandPno |
| 10 | | | | No-C | | | | 125 | 0 | 2 | Drum User1 |
| 11 | | | | No-C | | | | | | | |
| 12 | | | | No-C | | | | | | | |
| 13 | | | | No-C | | | | | | | |
| 14 | | | | No-C | | | | | | | |
| 15 | | | | No-C | | | | | | | |
| 16 | | | | No-C | | | | | | | |
| STM | | | | | | | | | | | |

StreamPCM Assign Map

| WaveID | Wave Name | FS | Note | Wave Type |
|--------|-----------|----|------|-----------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |

Channel Status

| Ch | VS | LED |
|-------|----|-----|
| Ch 1 | | |
| Ch 2 | | |
| Ch 3 | | |
| Ch 4 | | |
| Ch 5 | | |
| Ch 6 | | |
| Ch 7 | | |
| Ch 8 | | |
| Ch 9 | | |
| Ch 10 | | |
| Ch 11 | | |
| Ch 12 | | |
| Ch 13 | | |
| Ch 14 | | |
| Ch 15 | | |
| Ch 16 | | |

4.2.3. Assignment of StreamPCM

This section describes the procedure of how to assign StreamPCMs to music data with MA-5 Authoring Tool.

StreamPCM (WAVE → SMAF) Conversion Procedure

Stream PCM Edit View is a window to assign a Stream PCM to SMAF.

Since the maximum sound generation of Stream PCM is two tones, it is divided into two levels (*Upper/Lower*).

By dragging and dropping from Stream PCM Map to here, it becomes assignable.

For details about how to assign the Stream PCM, see “4.5StreamPCM Assign Map.”

By double-clicking the Stream truck, velocity conversion of Stream truck is possible; in addition, by right-clicking, Stream truck can be deleted. Moreover, displacement of position (*Drag*) and change of length (*Drag adjustment*) can be executable.

1. Load a SMF which has no Midi-event or includes a note for Stream

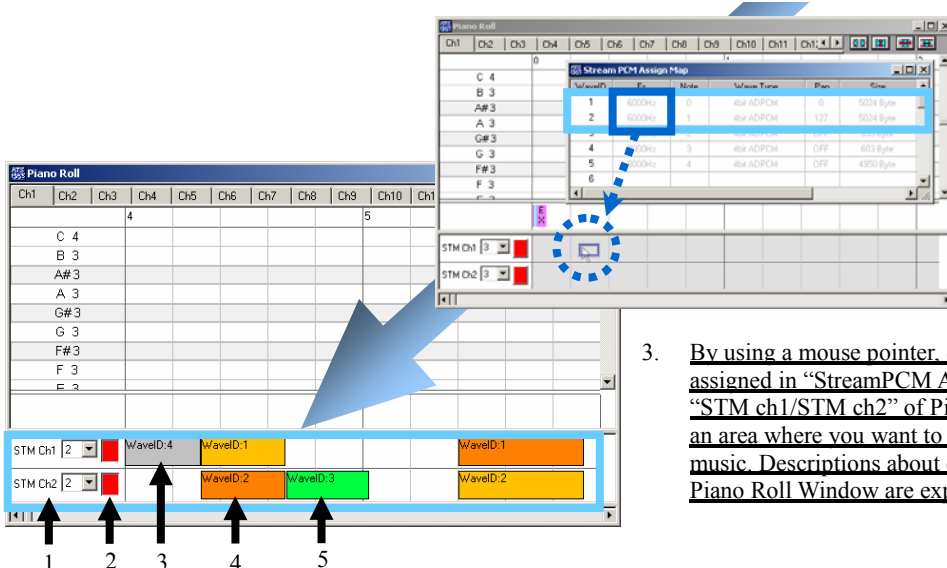
*note for Stream (BANK/MSB125-Note Number 0 to 12, 92 to 110)

Then, open the Piano Roll Window. The following windows are opened.

*When note for Stream is contained in SMF, WAVEID which corresponds to the note number is automatically displayed.



2. Register the WAVE Data of which a sampling frequency was optimized beforehand into StreamPCM Assign Map. Or load the existing StreamPCM File (*.sm3/5). *When a note for Stream is attached to SMF, be sure to register a WAVE corresponding to note number/WAVE ID.



3. By using a mouse pointer, drag a Wave Data which was assigned in “StreamPCM Assign Map” onto the section “STM ch1/STM ch2” of Piano Roll Window; then drop it on an area where you want to assign the Wave Data as Stream in music. Descriptions about each section for StreamPCM in Piano Roll Window are explained in the following table.

| No. | Function Name | Contents |
|-----|---------------------------------------|--|
| 1 | Ch | The channel which inserts a Stream PCM event is selected. From newer to older, the number in channel without events is initial-displayed. |
| 2 | Stream PCM Reserve | Sets the reserved number of Stream PCM. According to the reserved numbers, the amount of RAM consumption will be changed. Please refer to “3.6.1About RAM Size” for details. |
| 3 | Stream PCM Audio Track (Not Assigned) | It is the Stream PCM track with which only the stream event exists and a voice is not assigned. It is indicated in gray. |
| 4 | Stream PCM Audio Track (Stereo) | It is the StreamPCM track for stereo sound generation. It is displayed in two colors (upper level/lower level) orange & yellow. |
| 5 | Stream PCM Audio Track (Mono) | It is the Stream PCM track of monophonic sound generation. It is displayed in yellow-green. |

4.2.4. Assignment of HV-Script

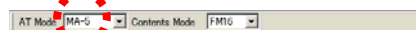
This section describes the procedure of how to assign HV-Scripts to music data with MA-5 Authoring Tool.

HV-Script Assign Procedures

HV Sequence Edit View

By dragging and dropping from HV-Script Assign Map to here, it becomes assignable. For details about HV-Script register to HV-Script Assign Map, see the description later in this document. By double-clicking HV Note bar, HV-Script becomes editable. In addition, the position can be displaced by dragging. By right-clicking, a delete menu will be displayed.

* Be sure to set up at least one note (note number 0~63) for HV into a channel which designates HV. (Note number corresponds to HV-Script ID.)

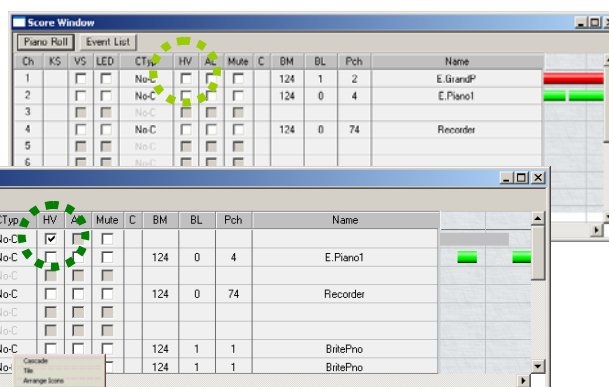


1. In order to assign a HV-script in music, MA-5 mode must be selected.



2. Place a check into HV-check box on "HV bar."

3. Place a check into HV-check box on "HV bar."

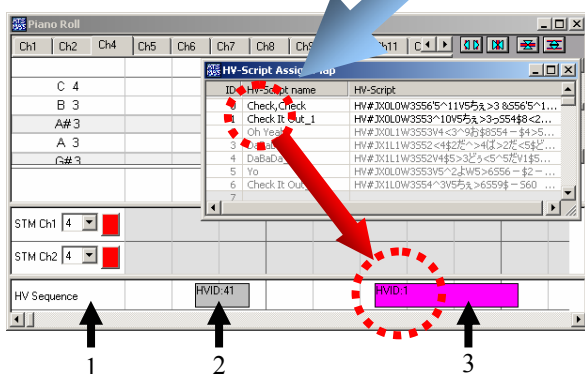


4. Place a check on HV section of the channel which is designated to HV on Score Window. (HV channel designation) If the operation is not performed, HV-channel can not be specified.

5. Piano Roll Window is opened. The following windows are opened. (If the SMF which includes note for HV, HV-Script ID corresponding to the note numbers are automatically displayed.)

6. Open HV-Script Assign Map, and create a new HV-Script on HV-Script Edit (double-click or right-click on assign section). Import of existing Multi-HV-Script file (.hs5) or import of existing HV-Script file (*.hvs) is possible. Be sure to register the HV-Script ID to correspond to note number on SMF.

7. When HV is newly added into music, it can be assigned with the following Drag&Drop method.



| No. | Function Name | Contents |
|-----|---------------------------------------|---|
| 1 | Ch | The channel which inserts a Stream PCM event is selected. From newer to older, the number in channel without events is initial-displayed. |
| 2 | Stream PCM Reserve | Sets the reserved number of Stream PCM. According to the reserved numbers, the amount of RAM consumption will be changed. Please refer to "" for details. |
| 3 | Stream PCM Audio Track (Not Assigned) | It is the Stream PCM track with which only the stream event exists and a voice is not assigned. It is indicated in gray. |

[Note] In order to use this function, it is required to set a channel which includes at least one NOTE as HV channel specification. Be sure to insert at least one Note into channel (CH) which is set as HV specification when creating SMF.

4.2.5. Event List Window

In “*Event List Window*”, contents read into “*Score Window*” are displayed.

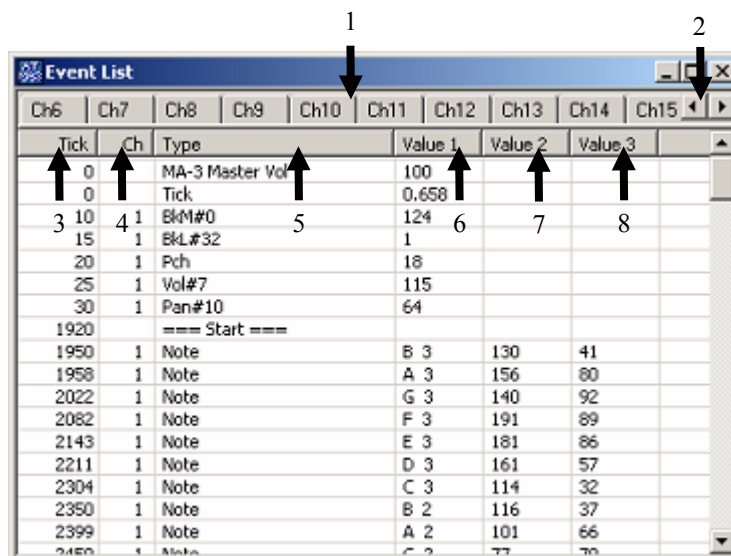


Figure. 4-4 Event List Window

| No. | Name | Description |
|-----|--|---|
| 1 | [Ch1~16], [Stream PCM] and [All] part tabs | By clicking each tab, a part displayed on the “ <i>Event List Window</i> ” can be changed. |
| 2 | Scroll buttons | Part tab is scrolled left or right by pressing this button. Part tab that is not displayed can be displayed. |
| 3 | Tick (Location) | Displays a location of each event by using the unit of Tick. |
| 4 | Ch (Channel) | Displays a channel of each event. |
| 5 | Type | Displays the type of each event. |
| 6 | Value1 | “ <i>Control Change</i> ”...Displays a data value. “ <i>Pitch Bend</i> ”...Displays a pitch bend value. “ <i>Note</i> ”...Displays a note number. “ <i>Stream PCM</i> ”...Displays a WaveID. |
| 7 | Value2 | “ <i>Note</i> ”...Displays game time of note. “ <i>Stream PCM</i> ”...Displays gate time of Stream PCM. |
| 8 | Value3 | “ <i>Note</i> ”...Displays velocity of note. “ <i>Stream PCM</i> ”...Displays velocity of Stream PCM. |

4.3. Voice List Window

Display “*Voice Map*.”

Click “*Voice List*” in “*Application Window*”, or select “*Voice List*” from “*Window Menu*” in “*Menu Bar*.”

When SMF is loaded, applicable voices of Voice List are assigned as a SMAF voice.

4.3.1. Normal Voice List

“*Normal Voice List*” is displayed by clicking “*Normal Tab*.”

In “*Normal Voice List*”, voice names and voice types which correspond to program changes per bank are displayed.

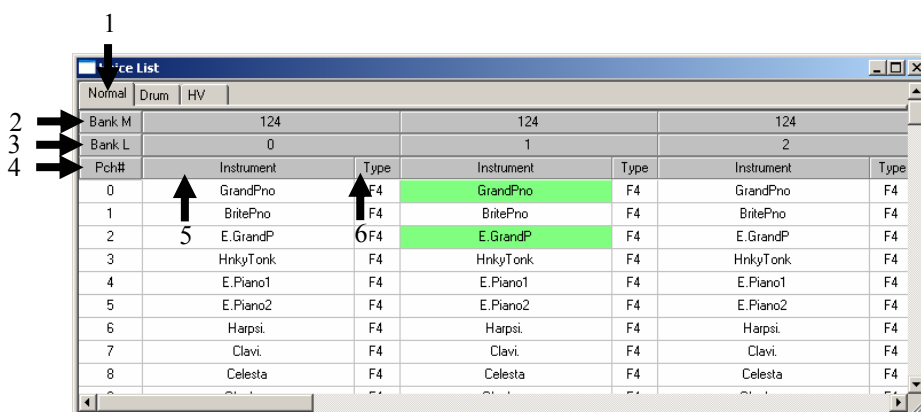


Figure. 4-5 Voice List Window (Normal Voice)

| No. | Function Name | Contents |
|-----|---------------|--|
| 1 | Normal tab | Displays Normal Voices. |
| 2 | Bank M | Displays BankSelect MSB. |
| 3 | Bank L | Displays BankSelect LSB. In case of drum voice, it becomes “ <i>Pch#</i> ” display. |
| 4 | Pch# | Displays voice numbers. In case of drum voice, it becomes “ <i>Note#</i> ” display. |
| 5 | Instrument | Displays voice names. When voice name is double-clicked, Voice Edit window is opened. The background of voices that includes “ <i>AL parameters</i> ” is displayed with green. |
| 6 | Type | Displays operator setting that is used. F4: 4 Operators setting / F2: 2 Operators setting / P: PCM setting |

【Note】 By “*Import from Voice*” button in tool bar, import of voice from Voice list to Voice Assign Map is possible, in addition, by “*Export from Voice*” button; export of voice from Voice Assign Map to Voice list is possible.

【Note】 In normal voice list, voice names and voice types corresponding to program numbers of each Bank are displayed, and in drum voice list, voice names and voice types corresponding to note numbers of each program are displayed.

【Note】 Each voice can be changed and be saved by Bank unit. For details about the save of voice list, see “*4.3.3.4 Saving Voice List*.”

4.3.2. Drum Voice List

“*Drum Voice List*” is displayed by clicking “*Drum Tab*.”

In “*Drum Voice List*”, voice names and voice types which correspond to program changes per bank are displayed.

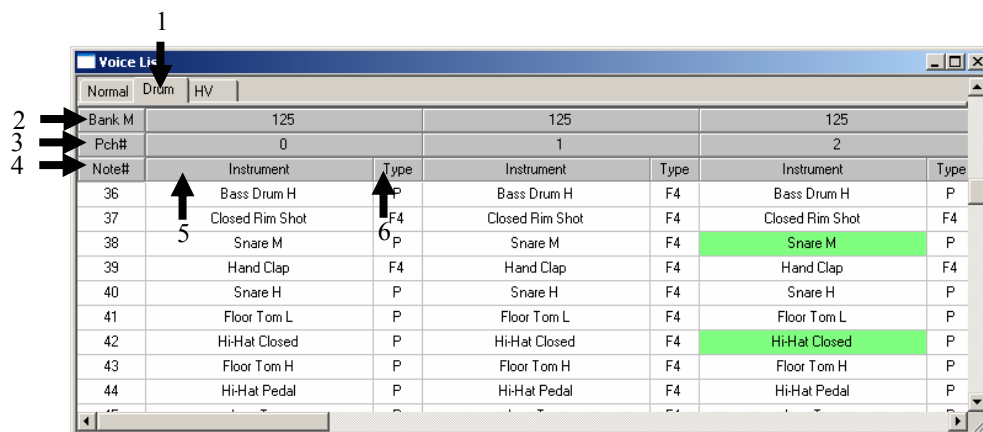


Figure. 4-6 Voice List Window (Drum Voice)

| No. | Function Name | Contents |
|-----|---------------|---|
| 1 | Drum tab | Displays Drum Voices. |
| 2 | Bank M | Displays BankSelect MSB. |
| 3 | Pch# | Displays voice numbers. In case of drum voice, it becomes “ <i>Note#</i> ” display. |
| 4 | Note# | Displays Note Numbers. |
| 5 | Instrument | Displays voice names. When voice name is double-clicked, Voice Edit window is opened. The background of voices that includes “ <i>AL parameters</i> ” is displayed with green. |
| 6 | Type | Displays operator that is used. F4: 4 operators setting / F2: 2 operators setting / P: PCM setting |

4.3.3. HV Voice List

Only for MA-5 Mode

By clicking “**HV Tab**”, HV voice list is opened. 10-Bank x 128-Voice =1280 of HV voices can be registered into HV voice list. Use this list to copy or paste contents to HV Extend Voice Map.

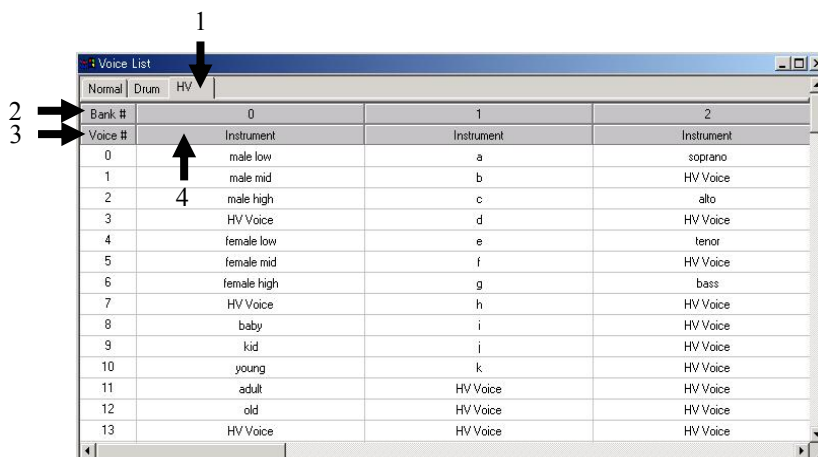


Figure. 4-7 HV Voice List

| No. | Function Name | Contents |
|-----|---------------|--|
| 1 | HV tab | Displays HV Voices. |
| 2 | Bank # | Displays the Bank number. |
| 3 | Voice# | Displays the voice number. |
| 4 | Instrument | Displays the voice name. Double-click to open “ <i>HV Voice Edit Window.</i> ” For details about HV Voice Edit Window, refer to “ <i>4.15Preference.</i> ” |

4.3.3.1. Voice List Window (Copy & Paste Function for Normal/Drum Voices)

By right-clicking the voice name of Voice List Window, “*Voice data Copy/Paste*” function menu is displayed.

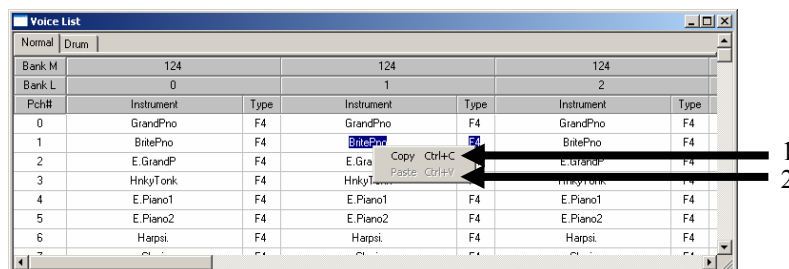
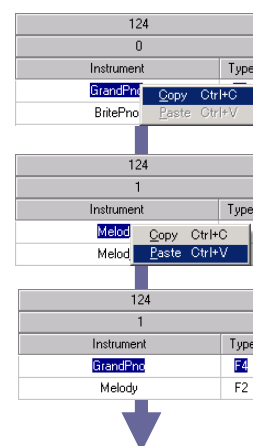


Figure. 4-8 Voice List Window (Copy & Paste Function)

| No. | Function Name | Contents |
|-----|---------------|-----------------------|
| 1 | Copy | Voices can be copied. |
| 2 | Paste | Voice can be pasted. |

4.3.2.3.1. Copy & Paste

1. At first, right-clicks the mouse on the voice, which you want to copy, on the voice list window. Popup menu is displayed, and then selects "**Copy**" here.
2. Secondly, right-clicks the mouse on the voice name of voice, where you want to paste the copied voice. Popup menu is displayed, and then selects "**Paste**" here. For the details about voice paste to "**Voice Assigned Map**", refer to "**4.4.1 Voice Assign Map (Copy & Paste Function)**."
3. Finally, the voice is pasted.



[Note] The copy/paste operation of voices can also be made by using "**Copy**" or "**Paste**" on the "**Edit**" menu of the application, or by using **Toolbar** of the application.

4.3.3.2. Voice List Window (Right-Click Menu for Normal/Drum Voices)

By right-clicking the "**Bank M**" section, a pop-up menu is displayed.

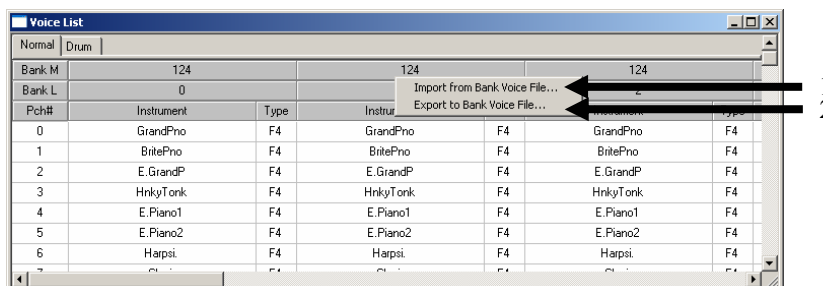


Figure. 4-9 Voice List Window (Right-Click Menu)

| No. | Function Name | Contents |
|-----|---------------------------|--|
| 1 | Import from Bank Voice... | Saves voice by Bank unit. For details, see " 4.3.3.4 Saving Voice List. " |
| 2 | Export to Bank Voice | Loads voice by Bank unit. For detail, see " 4.3.3.3 Loading of Voice List. " |

4.3.3.3. Loading of Voice List

4.3.2.3.2. Loading of All Voice

Saved voice file can be read.
Select "**Open Voice File**" from "**File**" menu of the menu-bar on the "**Application Window**." "**Open**" dialog box is displayed, and then, selects a file name and click "**Open**" button to read the voice file.

MA-3 Mode

A voice file (*.vm3) saved by MA-3 form can be loaded.

MA-5 Mode

A voice file (*.vm3/*.vm5) saved by MA-3/MA-5 form can be loaded.

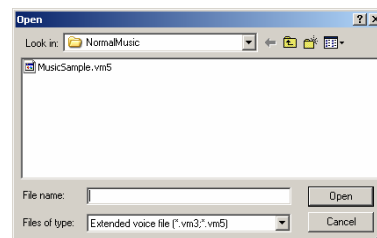


Figure. 4-10 Loading of All Voices

4.3.2.3.3. Loading by Bank Unit (Normal/Drum Voice Bank)

Saved voice file can be read in Normal Voice List and Drum Voice List.

Bank voice files saved with MA-3 Authoring Tool or MA-5 Authoring Tool can be read for the Normal voice list or the Drum voice list.

Right-clicks on the Bank MSB field of Voice List. Selects "**Import from Bank Voice**" from the "**Popup Window**." "**Open**" dialog box is displayed. Selects a file name, and then click "**Open**" button to read the voice file.

MA-3 Mode

A voice file (*.vm3) saved by MA-3 form can be loaded.

MA-5 Mode

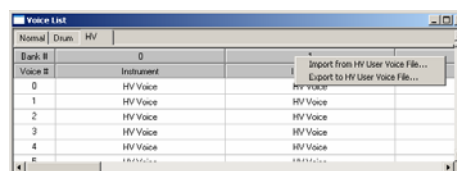
A voice file (*.vm3/*.vm5) saved by MA-3/MA-5 form can be loaded.

4.3.2.3.4. Loading by Bank Unit (HV Voice Bank)

Only for MA-5 Mode

Right-clicks the Bank field of Voice List.
Selects "**Import from HV User Voice File**" from the Pop-up window. Clicks "**Open**" to open the dialog box. At this point, by selecting a file name and by clicking "**Open**" button, voice file is read.

HV user voice files saved by MA-5 Authoring Tool can be read in HV voice list.



4.3.3.4. Saving Voice List

4.3.2.3.5. Saving All Voices

Select “**Save Voice File**” from “**File**” menu of the menu-bar on the “**Application window**.” “**Save As**” dialog box is displayed. Enter the file name in “**File name**” (the extension are “***.vm3 (MA-3)**”, “***.vm5 (MA-5)**”), and then click “**Save**” button to save the data.

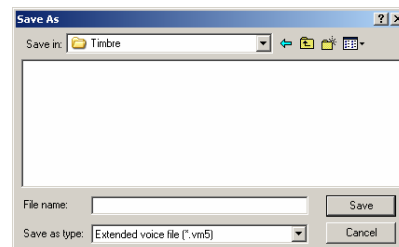


Figure. 4-11 Saving All Voice

MA-3 Mode

A voice file can be saved by MA-3 form (*.vm3).

MA-5 Mode

A voice file can be saved by MA-3/MA-5 form (*.vm3/*.vm5).

4.3.2.3.6. Saving by Bank Unit (Normal/Drum Voice Bank)

Voices that is registered in the Normal or Drum voice list can be saved by bank unit. Right-clicks on the Bank MSB field of Voice List. Select “**Export to Bank Voice**” from the “**Popup window**.” “**Save As**” dialog box is displayed. Enters the file name into the “**File name**” (extension are “***.vm3 (MA-3)**”, “***.vm5 (MA-5)**”) and click “**Save**” button to save the data.

MA-3 Mode

A voice file can be saved by MA-3 form (*.vm3).

MA-5 Mode

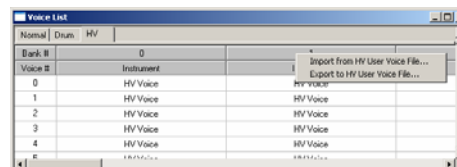
A voice file can be saved by MA-3/MA-5 form (*.vm3/*.vm5).

4.3.2.3.7. Saving by Bank Unit (HV Voice Bank)

Only for MA-5 Mode

Voices that are registered in the HV voice list can be saved by bank unit.

Right-clicks on the Bank field of Voice List. Selects “**Export to HV User Voice**” from the “**Popup window**.” “**Save As**” dialog box is displayed. Enters the file name in “**File name**” (extension is “**.hv5**”) and click “**Save**” button to save the data.



4.4. Voice Assign Map

Display voices which are used by each channel per channels.

Voices up to 128 including all channels can be displayed. (Data which uses more than 128 voices cannot be read.)

| Vo | C | Bank M | Bank L | Pch | Note | Name | Type | AL | WS15 | WS23 | WS31 | WaveID | TS[B] |
|----|---|--------|--------|-----|------|----------------|------|----|------|------|------|--------|-------|
| 1 | | 124 | 0 | 4 | 0 | E.Piano1 | F4 | | | | | | 30 |
| 2 | | 125 | 0 | 2 | 60 | Bongo H | F4 | | | | | | 30 |
| 3 | | 125 | 0 | 2 | 36 | Bass Drum H | P | | | | | RM 0 | 14 |
| 4 | | 125 | 0 | 2 | 61 | Bongo L | F4 | | | | | | 30 |
| 5 | | 125 | 0 | 2 | 42 | Hi-Hat Closed | P | | | | | RM 3 | 14 |
| 6 | | 124 | 1 | 2 | 0 | E.GrandP | F4 | | | | | | 30 |
| 7 | | 125 | 0 | 2 | 38 | Snare M | P | | | | | RM 1 | 14 |
| 8 | | 125 | 0 | 2 | 40 | Snare H | P | | | | | RM 1 | 14 |
| 9 | | 124 | 0 | 74 | 0 | Recorder | F4 | | | | | | 30 |
| 10 | | 124 | 1 | 3 | 0 | HnkyTonk | F4 | | | | | | 30 |
| 11 | | 124 | 1 | 0 | 0 | GrandPno | F4 | | | | | | 30 |
| 12 | | 125 | 0 | 2 | 49 | Crash Cymbal 1 | P | | | | | RM 6 | 14 |

Figure. 4-12 Voice Assign Map Window

| No. | Function name | Contents |
|-----|--------------------------|--|
| 1 | ALL | Displays all used voices. |
| 2 | Ch1~Ch16 | Displays the used voices per channels. |
| 3 | Vo. | Displays the number of used voices. |
| 4 | C (Change Flag) | When comparing the bank number of same voice list and voice of same voice number, and if the result is different, a blue circle is displayed. |
| 5 | Bank M (Bank Select MSB) | Displays BankSelect MSB. |
| 6 | Bank L (Bank Select LSB) | Displays BankSelect LSB. |
| 7 | Pch | Displays program change number. |
| 8 | Note | Displays note number. |
| 9 | Name | Displays voice name. When a voice name is double-clicked, Voice Edit window will be opened. (Voice Edit window of built-in ROM voices cannot be opened.) MA-5 Mode Note filed of voices with a check in "AL" field of Score Window and a check in "Enable AL" of AL Voice Edit are displayed with green. Name filed of voices with a check in "AL" field of Score Window but no check in "Enable AL" of AL Voice Edit are displayed with light green. |
| 10 | Type | Displays voice type to use. F4: 4 operators setting, F2: 2 operators setting, P: PCM setting. |
| 11 | AL | AL voice use in an applicable voice is specified. |
| 12 | WS15 (Wave 15) | When used voice is FM voice and WS15 is used, "Used" is displayed. |
| 13 | WS23 (Wave 23) | When used voice is FM voice and WS23 is used, "Used" is displayed. |
| 14 | WS31 (Wave 31) | When used voice is FM voice and WS31 is used, "Used" is displayed. |
| 15 | WaveID | When used voice PCM and RAM voice is used, its WaveID is displayed. When using Drum voice "RM" of ROM, "RM0~6" is displayed. |
| 16 | TS[B] (Total Size) | RAM size for used voice is displayed. The unit is "Byte." For details about RAM size, see "3.6.1 About RAM Size." |

4.4.1. Voice Assign Map (Copy & Paste Function)

By right-clicking the voice name of Voice Assign Map, “*Voice data Copy/Paste*” function menu is displayed.

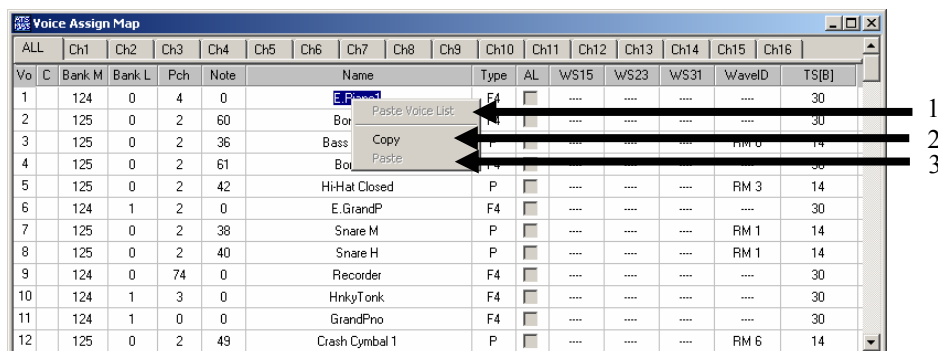
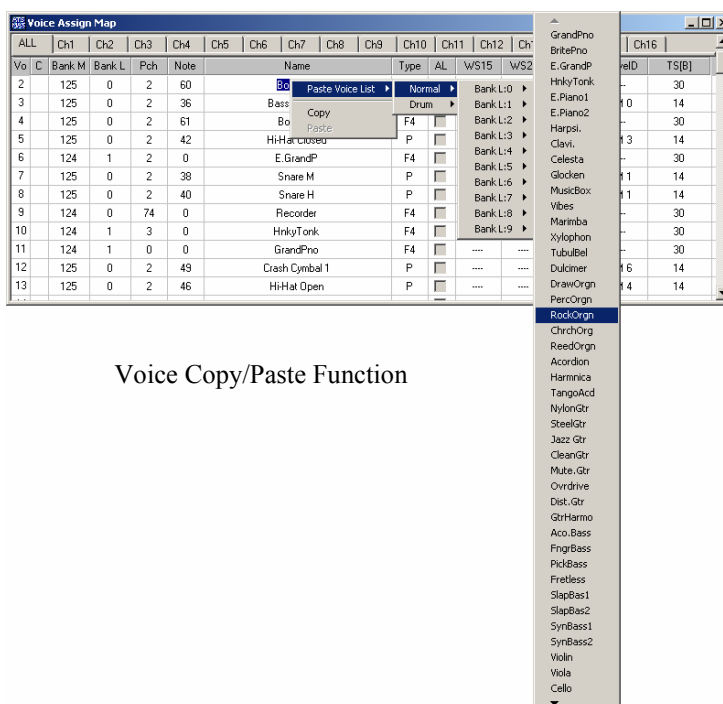


Figure. 4-13 Voice Assign Map (Copy & Paste Function)

| No. | Function Name | Contents |
|-----|------------------|---|
| 1 | Paste Voice List | Displays the contents of Voice List. For details, see the following figure. |
| 2 | Copy | Voices can be copied. |
| 3 | Paste | Voice can be pasted. |

The voice assignment method to SMAF can also select and assign a voice from “*Paste Voice List*” of Voice Assign Map besides copy & paste of Voice List to Voice Assign Map.

It is possible to change a voice by choosing Paste Voice List, and following and choosing a voice from the menu displayed by carrying out the right click of the voice name changing.



Voice Copy/Paste Function

4.4.2. Voice Assign Map (Right-Click Menu)

By right-clicking on a status such as “**Bank M**”, the Voice Assign Map right-click menu will appear.

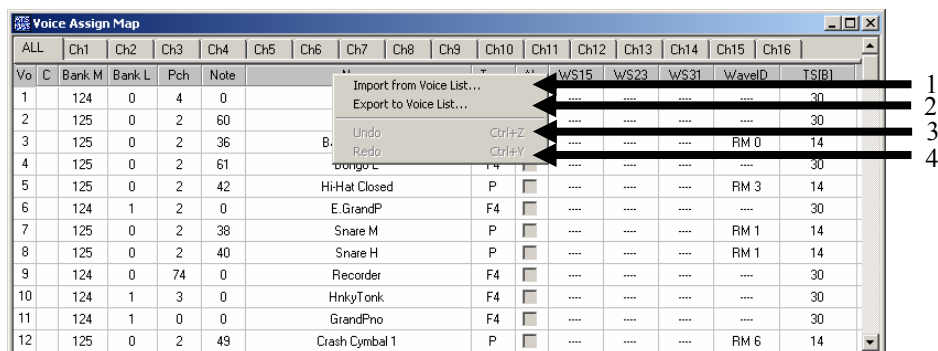


Figure. 4-14 Voice Assign Map (Right Click Menu)

| No. | Function name | Contents |
|-----|------------------------|--|
| 1 | Import from Voice List | Voice, which has the same voice number and same bank number in the Voice List, is imported into Voice Assign Map. In addition, the same operation can be performed same operation with “ Import from Voice List ” in a tool bar. |
| 2 | Export to Voice List | Voice, which has the same voice number and the same bank number in the Voice List, is exported from Voice Assign Map. In addition, the same operation can be performed with “ Export to Voice List ” in a tool bar. |
| 3 | Undo | Makes the last copy operation for voice invalid and returns it into the previous state. |
| 4 | Redo | Repeats the same process as the last performed process. |

4.5. StreamPCM Assign Map

Stream PCM is assignable.

Stream PCM can be registered the maximum of 32 waves, and can be simultaneously generated to two sound.

| WaveID | Wave Name | Fs | Note | Wave Type | Pan | Size | S/M |
|--------|------------------|--------|------|------------|-----|------------|-----|
| 1 | 01_Jet_Ster~.wav | 6000Hz | 0 | 4bit ADPCM | OFF | 10048 Byte | S |
| 2 | 02_Kick_Mono.wav | 8000Hz | 1 | 4bit ADPCM | 64 | 855 Byte | M |
| 3 | 03_Snare_Mo~.wav | 8000Hz | 2 | 4bit ADPCM | 64 | 603 Byte | M |
| 4 | 04_Filln_M~.wav | 8000Hz | 3 | 4bit ADPCM | 64 | 4950 Byte | M |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |

Figure. 4-15 StreamPCM Assign Map

| No. | Function Name | Contents |
|-----|-------------------|---|
| 1 | WaveID | Displays wave ID. Corresponds to Note number. Up to 32 waves can be registered. |
| 2 | Wave Type | Displays wave type. |
| 3 | Fs | Displays the frequency of wave. |
| 4 | Note | Displays note numbers. (0 to 12 and 92 to 110) |
| 5 | Wave Type | Displays wave type. |
| 6 | Pan | Displays pan of Wave. |
| 7 | Size | Displays the size of the read wave data. |
| 8 | S/M (Stereo/Mono) | The read wave data indicates whether it is stereo wave data and whether it is monophonic wave data. |

4.5.1. Details about Note to which a StreamPCM can be assigned

In order to register a Stream PCM event into SMF, it is necessary to set up by Bank Select, Program Change, or Note number beforehand, in other words, assigns by Stream PCM Edit Window of Piano Roll.

The bank selection of the note which can be used as a Stream PCM, a program change (an arbitrary value needs to be program changed for decision of a bank selection), and the note number are as follows.

| Bank MSB | Note number | Definition | |
|----------|-------------|--------------|-----------|
| 125 | 0 | Stream PCM | WaveID:1 |
| | 1 | | WaveID:2 |
| | : | | WaveID:X |
| | 12 | | WaveID:13 |
| | 13 | Drum Channel | |
| | 14 | | |
| | : | | |
| | 91 | | |
| | 92 | Stream PCM | WaveID:14 |
| | 93 | | WaveID:15 |
| | : | | WaveID:X |
| | 110 | | WaveID:17 |

[Note] For details, see “Contents Authoring Guideline.”

4.5.2. Details about Sound File which can be registered as StreamPCM

In MA-5 Authoring Tool, it is possible to convert a sound file as an encoding-processed (**compressed**) StreamPCM and to register it to SMAF, so that a channel sequence and a sound file (**AIFF/WAVE**) can be played synchronously on SMAF. Stream PCM can be registered up to 32 kinds and can generate up to 2 sounds simultaneously.

| Read Sound File | | Stream PCM | |
|-----------------|---------------------|-------------------------|--------------------|
| Bit Rate | Sampling Frequency | Bit Rate | Sampling Frequency |
| 8-bit | 4KHz ~8KHz (12kHz) | AIFF/WAVE Monophonic | 8-bit PCM |
| 16-bit | 4KHz ~16KHz (24kHz) | | 4-bit ADPCM |
| 8-bit | 4KHz ~(8KHz) | AIFF/WAVE Stereo | 8-bit PCM |
| 16-bit | 4KHz ~8KHz (12kHz) | | 4-bit ADPCM |

PCM (**Pulse Code Modulation**) is the digital recording system which changes analog signals, such as sound, into a digital signal. The signal of the sound which is the continuous waveform is started a fixed cycle (**sampling**), and it records as a digital signal by quantizing. ADPCM (**Adaptive Differential Pulse Code Modulation**) by the system, the whole amount of data is made small by quantizing only the difference of the data, which adjoins each other in the case of a sampling.

4.5.3. StreamPCM Assign Map (New/Delete Function)

By right-clicking the Stream PCM Assign Map window, “**New/Delete**” menu is displayed. In addition, it makes possible to perform the registration and delete of sound files.

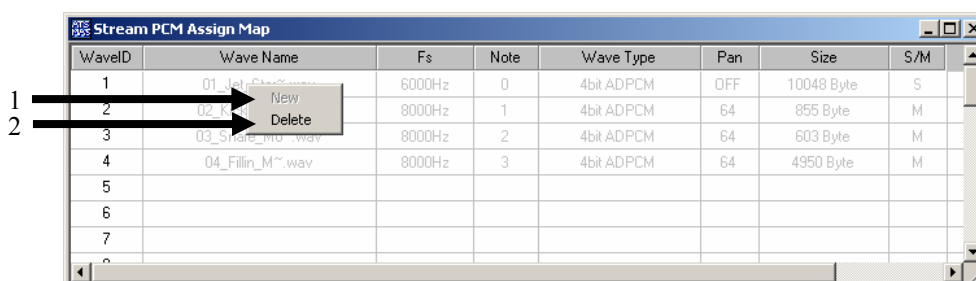


Figure. 4-16 StreamPCM Assign Map (New/Delete)

| No. | Function Name | Contents |
|-----|---------------|------------------------------|
| 1 | New | Opens a new WAVE data. |
| 2 | Delete | Deletes an opened Wave data. |

If the right click of the inside of a “**Stream PCM Assign Map Window**” is carried out, a New/Delete menu is displayed and registration of a sound file and deletion can be performed.

[Note] Refer to “**4.5.2Details about Sound File which can be registered as StreamPCM**”, for details about Fs of the file which can be read as a Stream PCM, and the encoding system which can be chosen.

[Note] Stereo Sound can be registered to one wave ID. (Stereo Lch/Rch is considered as one wave and it is counted as one).

4.5.4. StreamPCM Wave Panpot

By double-clicking the pan-display column, “*Stream PCM Wave Panpot*” dialog opens and the panpot can be set.

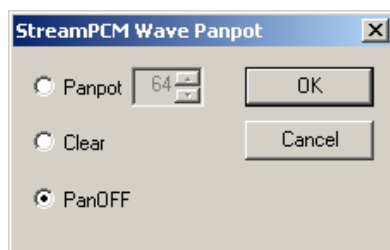


Figure. 4-17 Stream PCM Wave Panpot

When a section of Pan Display is double-clicked, “*Stereo PCM Wave Panpot*” is opened;
In addition, pan can be set up.

When a sound file is loaded, Panpot will be set up automatically according to the kind of sound file.

- Mono sound file : Panpot=64
- Stereo sound file : PanOff (Stereo Playback)

【Note】 For “*Stream PCM Wave Panpot Clear*” and “*Stream PCM Wave Panpot PanOFF*”, refer to “Contents Authoring Guideline For MA-5 Authoring Tool.”

4.5.5. StreamPCM Assign Map (Right-Click Menu)

By right-clicking on the status such as “*WaveID*” or “*Fs*”, a pop-up menu is displayed.

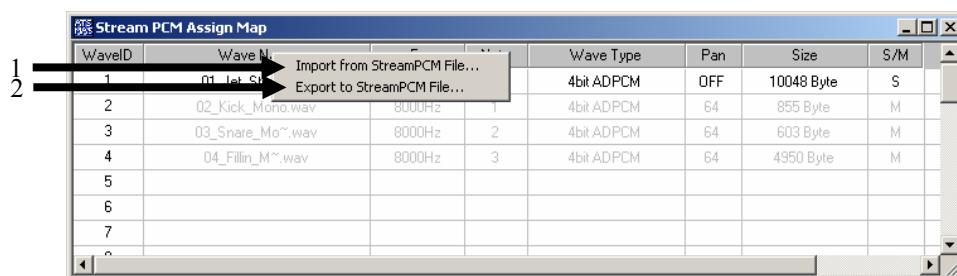


Figure. 4-18 StreamPCM Assign Map (Right-click Menu)

| No. | Function name | Contents |
|-----|-----------------------------|---|
| 1 | Import from Stream PCM File | Waveform data can be read from Stream PCM File (.sm3, .sm5) saved by Export to Stream PCM File. 【Note】 In the MA-3 mode, waveform data can be read from Stream PCM File (.sm3). |
| 2 | Export to Stream PCM File | All waveform data registered in Stream PCM Assign Map can be saved in StreamPCM File. (extension is “*.sm5”) |

4.6. HV Extend Voice Map

Only for MA-5 Mode

Displays the HV Extend Voice Map. HV Extend Voice can be used up to the maximum 16.
Selects “*HV Extend Voice Map*” on Window menu of the menu bar.

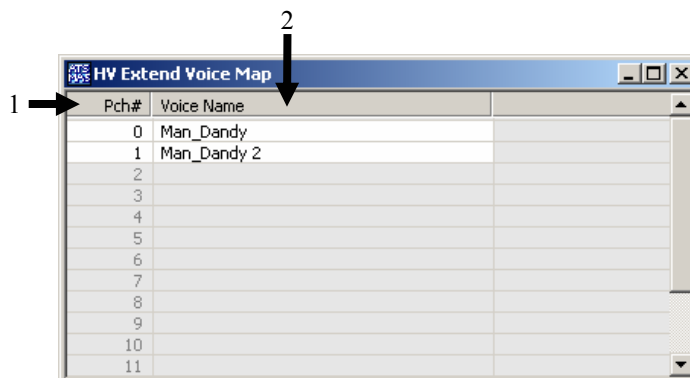


Figure. 4-19 HV Extend Voice Map

| No. | Function name | Contents |
|-----|-----------------------|---|
| 1 | Pch# (Program Change) | Displays the number of Extend Voice. |
| 2 | Voice Name | Displays the name of Extend Voice. Double-clicks to open Voice Edit Window. For details about “Voice Edit Window”, refer to “4.18Voice Edit Window” |

4.6.1. HV Extended Voice Map (Delete/Copy/Paste Function)

By right-clicking the number of Extend Voice or the name of Extend Voice, “*Delete/Copy/Paste*” menu will be displayed.

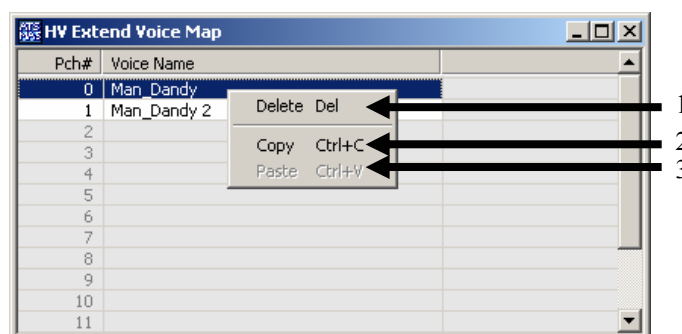


Figure. 4-20 HV Extend Voice Map (Delete/Copy/Paste)

| No. | Function name | Contents |
|-----|----------------|-------------------------------------|
| 1 | Delete (Del) | Deletes an Extend Voice from a Map. |
| 2 | Copy (Ctrl+C) | Copies an Extend Voice. |
| 3 | Paste (Ctrl+V) | Pastes an Extend Voice. |

4.6.2. HV Extended Voice Map (Right-Click Menu)

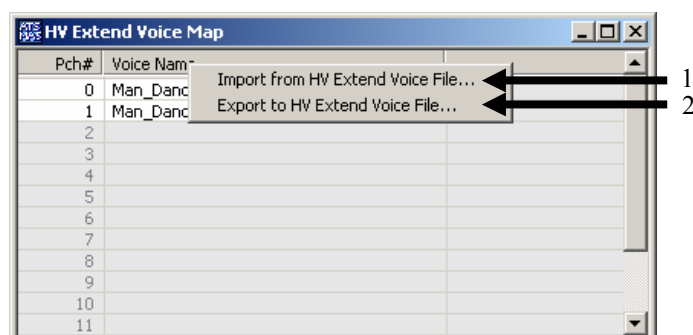


Figure. 4-21 HV Extend Voice Map (Delete/Copy/Paste)

| No. | Function name | Contents |
|-----|-------------------------------------|----------------------------------|
| 1 | Import from HV Extend Voice File... | Import from HV Extend Voice File |
| 2 | Export to HV Extend Voice File... | Export to HV Extend Voice File |

4.7. HV-Script Assign Map

Only for MA-5 Mode

HV script assignment map is displayed. HV script is assignable to 64 pieces.

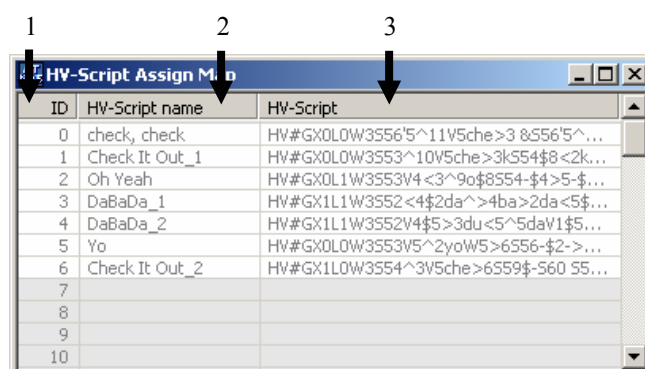


Figure. 4-22 HV-Script Assign Map

| No. | Function name | Contents |
|-----|----------------|---|
| 1 | ID | HV Script ID is displayed. It supports NoteNo.. |
| 2 | HV-Script name | The names of HV Script is displayed. |
| 3 | HV-Script | The contents of HV-Script is displayed. |

By double-clicking these fields, HV-Script edit dialog is appeared and made it possible to paste and to edit HV Script. For details about HV-Script Edit Dialog, see “**4.8HV-Script Edit Window.**”

4.7.1. HV-Script Assign Map (New/Delete/Copy/Paste Function)

Right-click these fields to display “*New/Delete/Copy/Paste*” menu.

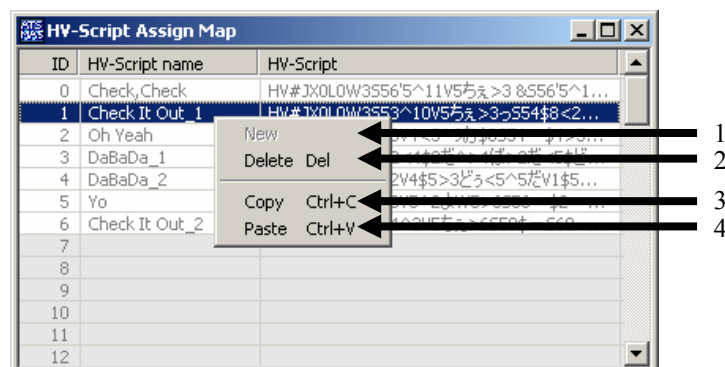


Figure. 4-23 HV-Script Assign Map (New/Delete/Copy/Paste)

| No. | Function name | Contents |
|-----|----------------|---|
| 1 | New | Displays HV-Script Edit dialog. You can paste and edit HV-Script. To select “ <i>New</i> ” form the menu, right-click the blank field (the field on which HV script is not pasted yet). |
| 2 | Delete (Del) | Deletes the HV-Script already pasted. |
| 3 | Copy (Ctrl+C) | Copies the HV-Script. |
| 4 | Paste (Ctrl+V) | Pastes the HV-Script. |

4.7.2. HV-Script Assign Map (Right-Click Menu)

Right-click on the status of “*ID*”, “*HV-Script name*”, or “*HV-Script*” to display the pop-up menu.

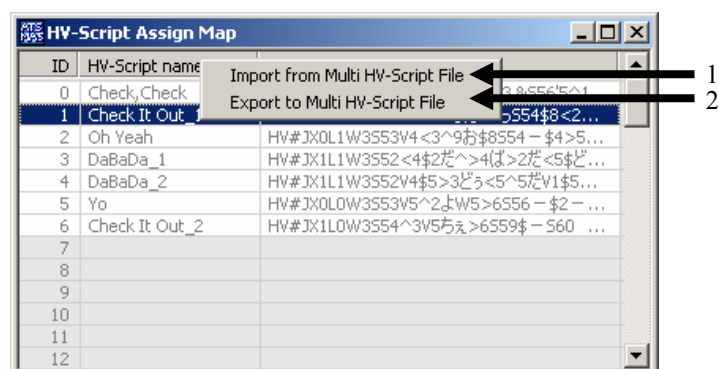


Figure. 4-24 HV-Script Assign Map (Right-Click Menu)

| No. | Function name | Contents |
|-----|----------------------------------|---|
| 1 | Import from Multi HV-Script File | Reads HV-Script form Multi HV-Script File (.hs5) which is saved by Export to Multi HV-Script File. |
| 2 | Export to Multi HV-Script File | Saves all HV-Script on the map putting together into Multi HV-Script File. (File extensions will be “.hs5”) |

4.8. HV-Script Edit Window

HV-Script can be pasted, edited, read from a file, and saved into a file on this dialog. To display this dialog, double-click on HV-Script dialog, or select “**New**” from New/Delete/Copy/Paste menu.

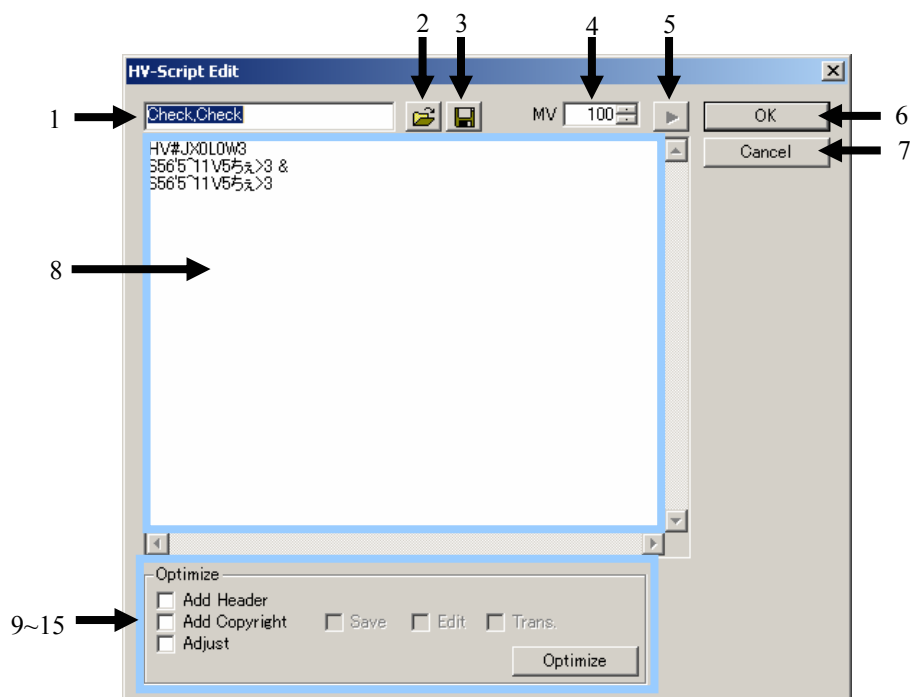
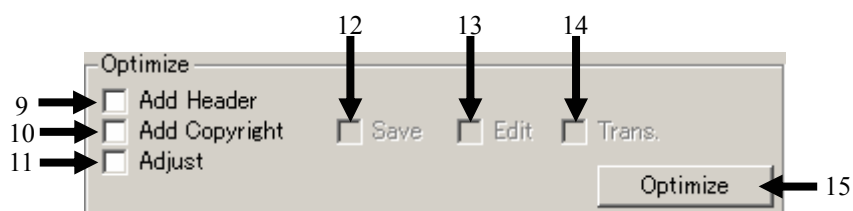


Figure. 4-25 HV-Script Edit Window

No. 1 to 8

| No. | Function name | Contents |
|-----|-----------------------------|--|
| 1 | Input Box of HV-Script Name | Names the HV-Script. If you read HV-Script file by using “ Open ” button described in “ No.2 ”, the name of the file will be automatically inputted as the name of HV-Script. |
| 2 | Open | Reads HV-Script file (.hvs). |
| 3 | Save | Saves the present contents of “ No.8 HV-Script Input Box ” as HV-Script file. File extension will be “.hvs.” |
| 4 | MV (Master Volume) | Displays a value of Master volume. Default value is “100.” |
| 5 | Play (Playback button) | Plays the contents of “ No.8 (HV-Script Input Box) .” When HV channel is not designated, it can not be played back. |
| 6 | OK | Registers the contents of “ No.1 ” and “ No.8 ” to HV-Script Assign Map, and closes the dialog. |
| 7 | Cancel | Closes the dialog without registering to HV-Script Assign Map. |
| 8 | HV Script Input Box | HV-Script can be written and edited directly here. |



No. 9 to 15

| No. | Function name | Contents |
|-----|--------------------|--|
| 9 | Add Header | When clicking “ <i>Optimize</i> ” button after setting ON this check box, a header which starts with HV# is added on the top of HV-Script. |
| 10 | Add Copyright | When clicking “ <i>Optimize</i> ” button after setting ON this check box, the copyright information which starts with “##” is added on the following position. When a header exists in HV-Script, the copyright information is added after the header information. When a header does not exist in HV-Script, the copyright information is added at the top. The copyright information has 3 kinds, Save, Edit, and Trans. It is possible to output copyright information to each item individually, if they are specified. When there is not any specification about neither Save, Edit, and Trans, the copyright information on HV-Script is deleted. |
| 11 | Save Check Box | When executing “ <i>Add Copyright</i> ” with this check box ON, “ <i>Not Savable</i> ” is added into the copyright information. |
| 12 | Edit Check Box | When executing “ <i>Add Copyright</i> ” with this check box ON, “ <i>Not Editable</i> ” is added into the copyright information. |
| 13 | Trans. Check Box | When executing “ <i>ADD Copyright</i> ” with this check box ON, “ <i>Not Transferable</i> ” is added into the copyright information. |
| 14 | Adjust Check Box | When clicking “ <i>Optimize</i> ” button after setting ON this check box, it may convert a voice string of HV-Script, and may convert a long vowel or silent symbol to 2 bytes character. Also it may adjust continuous rhythm symbols, or delete “ <i>New-line</i> ” to make HV-Script compact. |
| 15 | Optimize Check Box | When clicking this button, the functions of “ <i>No.9</i> ” to “ <i>No.14</i> ” are executed. |

4.8.1. HV-Script Creation Procedures**HV-Script Create Procedures**

Open a SMF data in MA-5 Authoring Tool

In order to assign a HV functions, these steps must be selected and set.

- AT Mode must be “MA-5 mode.”
- HV check box on HV bar must be marked.

1. Select “HV-Script Assign Map” from Window Menu in Menu Bar. “HV-Script Assign Map Window” is open on Application Window. Right click the mouse on a blank space; then popup menu is opened. Select “New” from the menu.
2. “HV-Script Edit Window” is opened in Application Window. Type your scripts code into “HV Script Input Box”; then press “Play” to confirm typed script codes.
3. Press “Save” to save your script. “Save as...” dialog is appeared. Type an optional file name (File format is (*.hvs)); then press “Save.”

For details about HV-Script, see the attached document which comes with this document.

4.9. Mixer

The playback balance of each channel can be kept. (The balance cannot be changed during a playback of data.)

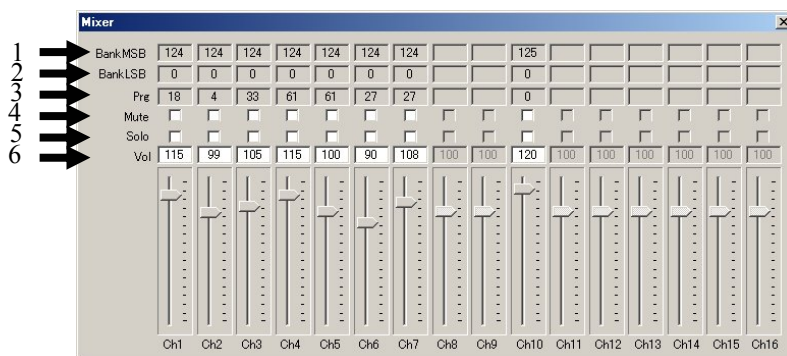


Figure. 4-26 Mixer Window

| No. | Function name | Contents |
|-----|----------------------------|--|
| 1 | Bank MSB (Bank Select MSB) | Displays BankSelect MSB. |
| 2 | Bank LSB (Bank Select LSB) | Displays BankSelect LSB. |
| 3 | Prg (Program) | Displays Program Change Number. |
| 4 | Mute | Mutes a relevant channel. This is not reflected on the music data (<i>SMAF</i>). |
| 5 | Solo | Plays a relevant channel with solo. This is not reflected on the music data (<i>SMAF</i>). |
| 6 | Vol | Displays a volume value. |

4.10. Event Density

Converts the event density to the MIDI byte counts in the read music and displays it.

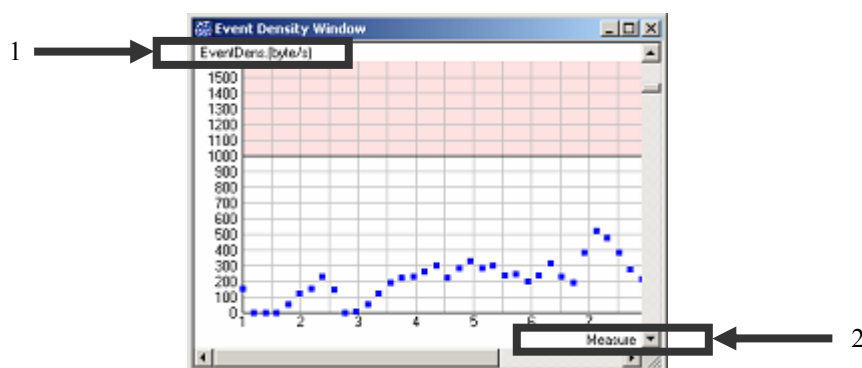


Figure. 4-27 Event Density

| No. | Function name | Contents |
|-----|------------------------|---|
| 1 | Event Density [byte/s] | Displays event density. The unit time used as criteria when converting an event density can be set up by preference. |
| 2 | Measure/Time [Sec] | Displays time. <ul style="list-style-type: none"> • In case of SMF import : Measure (<i>beat unit</i>) is displayed. • In case of SMAF Open : Time "<i>sec</i>" is displayed. |

4.11. STM Size

STM Size Window displays the StreamPCM size in loaded music.

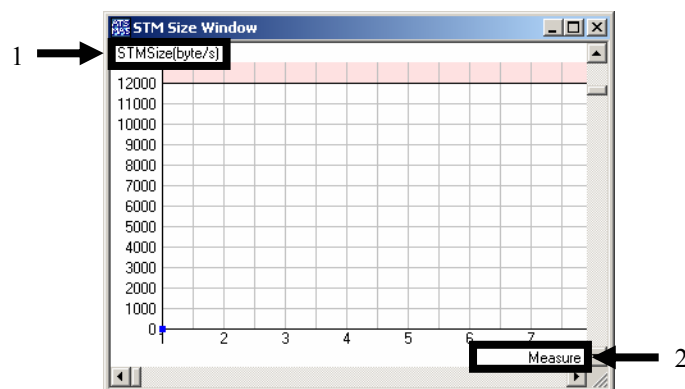


Figure. 4-28 STM Size

| No. | Function name | Contents |
|-----|--------------------|---|
| 1 | STM Size "byte/s" | Displays stream PCM size. |
| 2 | Measure/Time "Sec" | Displays time. •When SMF import : Displayed by Measure (per beat) •When SMAF open : Displayed by Time "sec" |

4.12. Velocity Change

Velocity of Note event in read music can be changed.

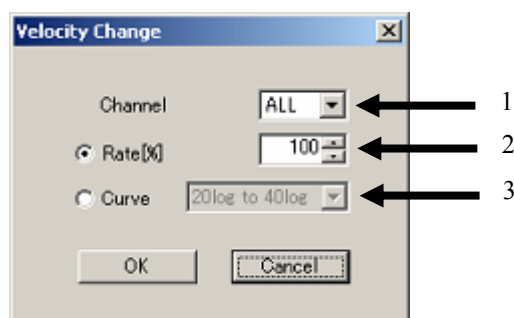


Figure. 4-29 Velocity Change Dialog

| No. | Function name | Contents |
|-----|---------------|--|
| 1 | Channel | Designates the channel to change its velocity. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 channel, STM (StreamPCM), and ALL (All note event) can be designated. |
| 2 | Rate [%] | Designates the change rate of velocity value 50 ~ 200%. When you input a value directly, be sure to push "Enter" key after input. |
| 3 | Curve | Designates the curve which changes a velocity. There are two kinds of curves "20logto40log" and "40logto20log." |

4.13. Edit Information

Information can be input / edited.

Figure. 4-30 Edit Information

| No. | Function name | Contents |
|-----|------------------|--|
| 1 | Contents Class | Contents Class can be displayed |
| 2 | Contents Type | Contents Type can be displayed. |
| 3 | Code Type | Code type can be set. Shift-JIS, Latin-1, EUC-KR, or UTF-8 whichever are selectable. |
| 4 | Language | Language classification can be set up. When code type is UTF-8, it can be set. |
| 5 | Vendor name | Vendor's name can be input. |
| 6 | Carrier name | Carrier name can be input. |
| 7 | Category name | Category name can be input. |
| 8 | Song title | Music title can be input. |
| 9 | Artist name | Artist's name can be input. |
| 10 | Lyricist | Lyricist name can be input. |
| 11 | Composer | Composer's name can be input. |
| 12 | Arranger | Arranger's name can be input. |
| 13 | Copyright© | Copyright can be input. |
| 14 | Management group | Name of copyright management group can be input. |
| 15 | Management info. | Management Information can be input. |
| 16 | Creation date | Creation date and time can be input. |
| 17 | Revision date | Revision date can be input. |

4.14. File Access Log



Figure. 4-31 File Access Log

Log is displayed when operation related to the file is performed.
The performed operation and path of file are displayed.
The contents of display do not disappear until application ends.

4.15. Preference

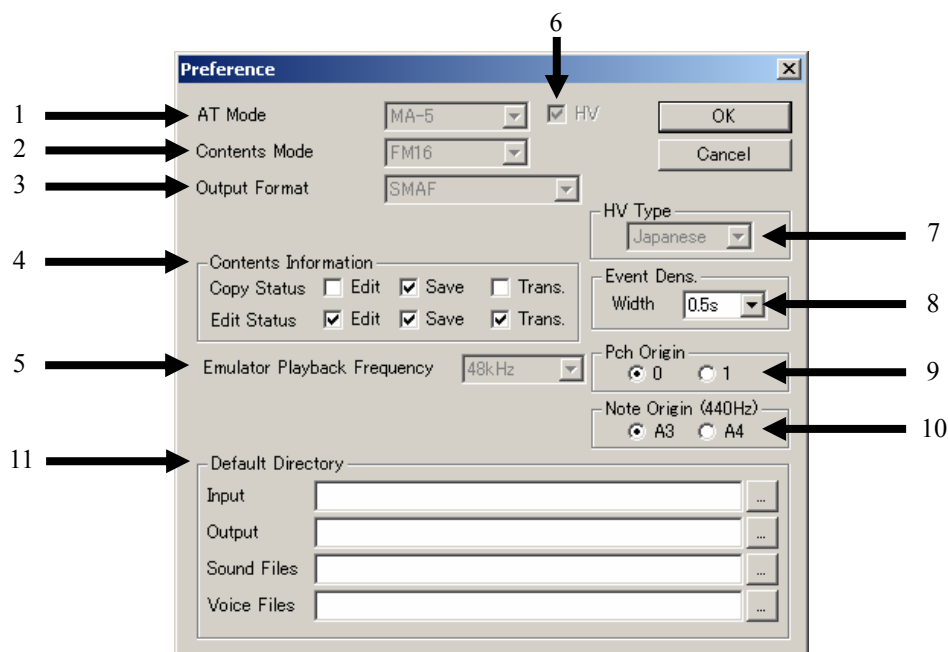


Figure 4-32 Preference Window

| No. | Function name | Contents | |
|-----|-----------------------------|---|---|
| 1 | AT Mode | Switches the mode of the Authoring Tool. | |
| | | MA-3 Mode | This is a mode for creating contents for MA-3. SMAF file that has been created in MA-5 mode cannot be read in MA-3 mode. |
| | | MA-5 Mode | This is a mode for creating contents for MA-5. SMAF file that has been created with MA-3 Authoring Tool can be read and edited in this mode. (When saving a SMAF for MA-3 in MA-5 mode, it is saved in file format for MA-5.) |
| 2 | Contents Mode | Changes FM mode. FM mode cannot be changed when music data are read on the Authoring Tool. Change FM mode after closing a music data. | |
| | | MA-3 Mode | |
| | | FM16 Mode | 2-operator voice, 4-operator voice, and PCM voice can be used. |
| | | FM32 Mode | 2-operator voice and PCM voice can be used. |
| | | MA-5 Mode | |
| | | FM16 Mode | 2-operator voice, 4-operator voice, and PCM voice can be used, and AL parameter can be set. |
| | | FM32 Mode | 2-operator voice and PCM voice can be used, and AL parameter can be set. |
| | | ALL64 Mode | 2-operator voice and PCM voice can be used. (AL parameter, Stream PCM, and HV voice are not available.) |
| 3 | Output Format | Displays the output format. | |
| 4 | Contents Information | Copy Status | Copy status can be set. |
| | | Edit | Places a check here to enable edition of relevant contents on the portable terminals. To make the following setting of Edit Status valid, it is necessary to place a check here. |
| | | Save | Places a check here to enable saving of relevant contents on the portable terminals. |
| | | Trans | Places a check here to enable transfer of relevant contents on the portable terminals. |
| | | Edit Status | Edit status can be set. Edit status becomes the copy status of secondary literary works that have been edited using an application for edition on the portable terminals. |
| | | Edit | Places a check here to enable edition of relevant contents on the portable terminals. To make the following setting of Edit Status valid, it is necessary to place a check here. |
| | | Save | Places a check here to enable saving of relevant contents on the portable terminals. |
| | | Trans | Places a check here to enable transfer of relevant contents on the portable terminals. |
| 5 | Emulator Playback Frequency | Emulator Playback frequency can be set up. Either of 48kHz (default), 44,1kHz, 32kHz, or 22.05kHz can be selected. | |

| No. | Function name | Contents | |
|-----|-------------------|--|--|
| 6 | HV Check Box | MA-5 Mode Paste, edit, and play HV can be operated by placing a check in this box. It cannot be checked under ALL 64 mode. Select FM16 or FM32 mode to use HV function. Be sure to put a check into the HV check box and make HV "ON" before reading SMF, when making the contents which used HV from SMF. HV is turned ON/OFF according to the SMAF information when SMAF is re-edited. In the state of HV OFF, it will be set to HV ON if SMAF with HV is opened. In the state of HV ON, it will be set to HV OFF if SMAF without HV is opened. | |
| 7 | HV Type | Displays the languages depending on the Operation System which you use. | |
| 8 | Event Dens. | Width | The unit time used as the standard for converting event density can be set. 0. 1 sec, 0.2 sec, 0.5 sec, 1.0 sec, 1.5 sec, or 2.0 sec can be selected. (Density unit is Bytes/Sec=Density/Width.) |
| 9 | Pch Origin | Whether program change number starts from "0" or from "1" can be selected by selecting Pch Origin. | |
| 10 | Note Origin | It can set to display Note of 440 Hz as A3 or A4. The Note display of EventList and PianoRoll change, but the interval of the voice that is generated does not change. | |
| 11 | Default Directory | Input | The default directory at the time of loading can be set up. |
| | | Output | The default directory at the time of saving can be set up. |
| | | Sound Files | A sound file is loaded and the default directory at the time can be set up. |
| | | Voice Files | A voice data file is loaded and the default directory at the time can be set up. |

4.16. DVA Checker

This is a window to check the maximum simultaneous pronunciation numbers.

When an error occurred in the maximum simultaneous pronunciation number, it is used to pinpoint the error parts.



Figure. 4-33 DVA Checker

| No. | Function name | Contents |
|-----|---------------|---|
| 1 | Mode | Check over the Max voice By clicking the Check button, the position of which it exceeded the number of maximum simultaneous pronunciation in each mode (FM32 , FM16 , and ALL64) and its pronunciation number are checked. The value of "Time", "FM" and "PCM" are displayed when the result is "Over." Check the Max Voice Number of Sequence By clicking the Check button, the position of the maximum simultaneous pronunciation number in data and the number of pronunciation are checked. The value of "Time", "FM" and "PCM" are surely displayed, it is not concerned with Result. |
| 2 | Output file | By placing a check in a box, time of which it exceeded the number of maximum simultaneous pronunciation in each mode (FM32 , FM16 , and ALL64) and its pronunciation number can be saved by text-file format. (DVAchecker_result.txt) The text file is saved in the folder which is installed in MA-5 Authoring Tool. |
| 3 | Result | Displays the result which checked the simultaneous sound generation number. If it is not over the number of maximum simultaneous pronunciation in each mode, "O.K." will be displayed. If it is over, "Over" will be displayed. And if the result is "Over", open the above text file and confirm the details, please. |
| 4 | Time | Displays the object time in "ms" unit. |
| 5 | FM | Displays the number of simultaneous sound generation of FM voice. |
| 6 | PCM | Displays the number of simultaneous sound generation of PCM voice. |

4.17. about Authoring Tool

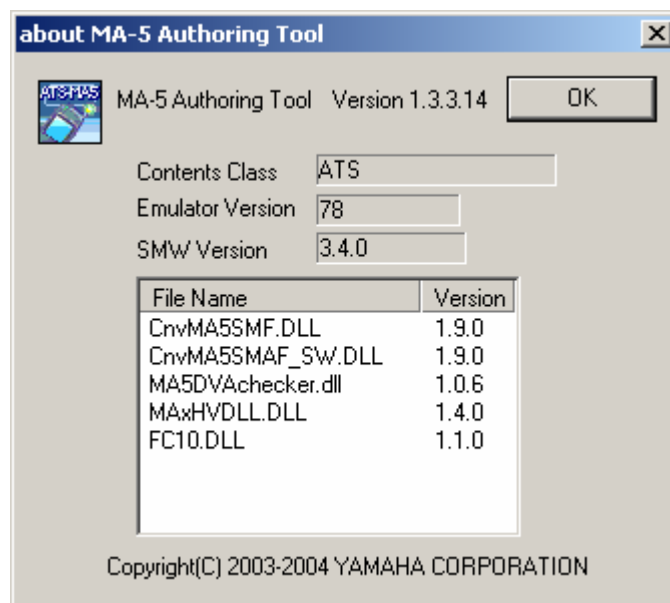


Figure. 4-34 about Authoring Tool

【Note】 Refer to “[3.3.6Help Menu](#)” to open this window.

4.18. Voice Edit Window

4.18.1. FM Voice Edit Parameter

Double-clicks the user voice name shown on the “*Voice List Window*” to display “*Voice Edit window*.”

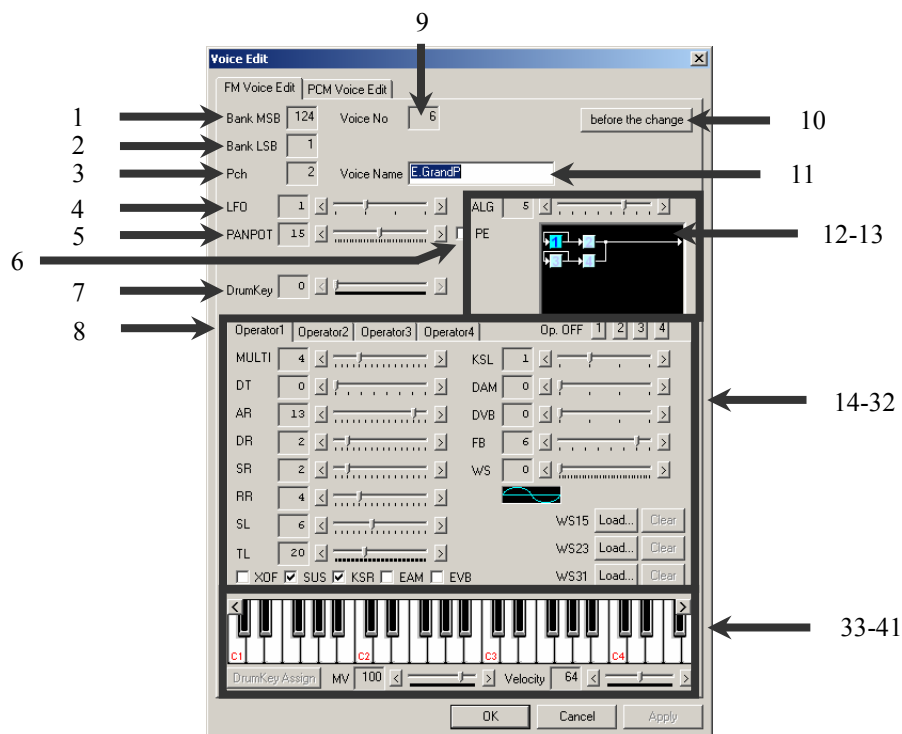

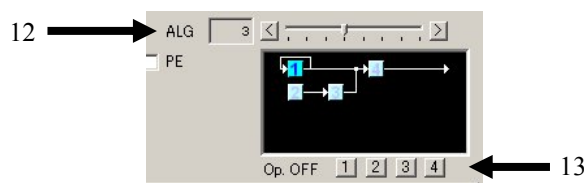


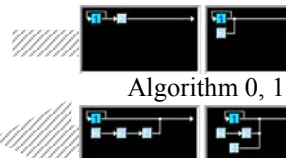
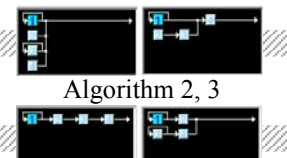
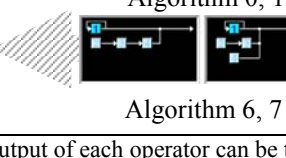
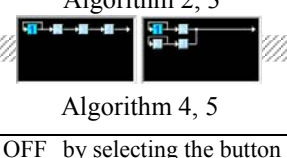
Figure. 4-35 FM Voice Parameter

No. 1- 12

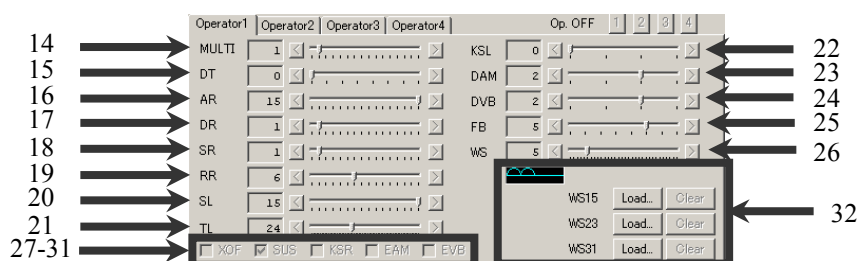
| No. | Function name | Contents |
|-----|--|---|
| 1 | Bank MSB | Displays Bank MSB in which the voices being edited exist. It cannot be changed here. |
| 2 | Bank LSB | Displays Bank LSB in which the voices being edited exist. |
| 3 | Pch | Displays/Changes the program change for the voices being edited. |
| 4 | LFO | Sets LFO frequency that is used for each voice. LFO= 0 : 1.8 Hz, LFO= 1 : 4.0 Hz, LFO= 2 : 5.9 Hz, LFO= 3 : 7.0 Hz |
| 5 | Panpot | Sets right-left balance for each channel. (0...15...31) The smaller value, the further it pans to the left, or the larger value, the further it pans to the right. |
| 6 | PE | Place a check in this box to disable the pan setting of the control change and to enable the value of panpot of the voices. |
| 7 | DrumKey | Parameter that functions only at edition of the drum voice. It changes the key which the voice being edited actually generates. |
| 8 | Operator 1, 2, 3, 4  | Changes Operator. The display changes between 1 to 2 and 1 to 4 in accordance with the setting of the algorithm. Right-click on the tab of Operator1 to 4 to display Copy/Paste menu with which the Operator can be copied. |
| 9 | Voice No. | Displays the voice number being edited with Voice Assign Map. |
| 10 | Before the Change | Press this switch to listen to the voices before they are edited. Press this switch again to restore the voices being edited. |
| 11 | Voice Name | Sets the voice name being edited. |

No.12-13



| No. | Function name | Contents |
|-----|-----------------------|---|
| 12 | ALG (Algorithm) | <p>Sets algorithm. 2 Operator or 4 Operator is set in accordance with the type of algorithm.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In FM32 mode, when algorithm of 2op is not selected, it does not generate normally. Please set 0 or 1 to ALG.</p> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Algorithm 0, 1</p> </div> <div style="text-align: center;">  <p>Algorithm 2, 3</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Algorithm 6, 7</p> </div> <div style="text-align: center;">  <p>Algorithm 4, 5</p> </div> </div> |
| 13 | Op OFF [Operator OFF] | The output of each operator can be turned OFF by selecting the button of 1 to 4. |

No.14-32



| No. | Function name | Contents | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|-------------------|--|-------|---|---|---|---|---|---|---|-------|-------|-------|-------|-------|-------|------------|-----|---|---|---|---|---|---|---|---|---|----|----|----|
| 14 | MULTI | <div>Designates a multiplier for the frequency.</div> <table><tr><td>MULTI</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10,11</td><td>12,13</td><td>14,15</td></tr><tr><td>Multiplier</td><td>1/2</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>12</td><td>15</td></tr></table> | MULTI | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10,11 | 12,13 | 14,15 | Multiplier | 1/2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 15 |
| MULTI | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10,11 | 12,13 | 14,15 | | | | | | | | | | | | | | | | | |
| Multiplier | 1/2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 15 | | | | | | | | | | | | | | | | | |
| 15 | DT (Detune) | <div>Designates Detune. Detune shifts the pitch delicately to cause the feeling of chorus. DT=1 to 3 shifts the pitch upwards. Difference width becomes large in the order of 1, 2, and 3. DT=5 to 7 shifts the pitch upwards. Difference width becomes large in the order of 5, 6, and 7. DT= 0 and 4, it is standard pitch.</div> <div>The frequency of Detune is affected by the setting of MULTI. When MULTI= 2 times, the values of Detune are doubled.</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | AR (Attack Rate) | <div>Attack Rate is the time from the starting of tone generation (-96 dB) to the time of maximum volume (0 dB).</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | DR (Decay Rate) | <div>Decay Rate is the decay time from the moment the maximum volume (0 dB) to the moment Sustain Level (SL).</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | SR (Sustain Rate) | <div>Sustain Rate designates the rate of decay from the moment a Sustain Level is attained. Unlike other rate setting, setting this to “0” causes continuation of the Sustain Level.</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| No. | Function name | Contents | | | | | | | | | | | | | | | | | | |
|----------------------|--|--|---------------|---------|---------|-------|--------|--------|---|---|---|----------------------|---|----------|---------|---------|---------|-------|--------|--------|
| 19 | RR (Release Rate) | Release Rate is the time from key off to the moment the silent state (-96 db) is attained. When a check is placed in the check box of SUS, the setting is ignored. | | | | | | | | | | | | | | | | | | |
| 20 | SL (Sustain Level) | The Sustain Level is the one at which Decay Rate changes to Release Rate for decaying tone, or the level at which volume of a continuous tone is sustained. | | | | | | | | | | | | | | | | | | |
| 21 | TL (Total Level) | Sets the level of envelope. | | | | | | | | | | | | | | | | | | |
| 22 | KSL (Designation of Level Scaling) | For natural instruments, the volume generally decreases and the interval becomes higher. The scaling of level simulates this phenomenon. KSL sets the amount of decay per octave. KSL= 0 : 0, KSL= 1 : 3.0dB / oct KSL= 2 : 1.5dB / oct, KSL= 3 : 6.0dB / oct | | | | | | | | | | | | | | | | | | |
| 23 | DAM (Depth of Amplitude Modulation) | Sets the depth of amplitude modulation (AM). DAM= 0 : 1.3 dB, DAM= 1 : 2.8 dB DAM= 2 : 5.8 dB, DAM= 3 : 11.8 dB | | | | | | | | | | | | | | | | | | |
| 24 | DVB (Depth of Vibrato Modulation) | DVB= 0 : 3.4 cents, DVB= 1 : 6.7 cents DVB= 2 : 13.5 cents, DVB= 3 : 26.8 cents | | | | | | | | | | | | | | | | | | |
| 25 | FB (Amount of Feedback) | This function enables only Modulator side Operator. It designates the degree of feedback modulation. <table><tr><td>Setting value</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>Degree of modulation</td><td>0</td><td>$\pi/16$</td><td>$\pi/8$</td><td>$\pi/4$</td><td>$\pi/2$</td><td>π</td><td>2π</td><td>4π</td></tr></table> | Setting value | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Degree of modulation | 0 | $\pi/16$ | $\pi/8$ | $\pi/4$ | $\pi/2$ | π | 2π | 4π |
| Setting value | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | |
| Degree of modulation | 0 | $\pi/16$ | $\pi/8$ | $\pi/4$ | $\pi/2$ | π | 2π | 4π | | | | | | | | | | | | |
| 26 | WS (Waveform election) | Designates waveform of each Operator that is used for FM operation. The waveform that is used can be selected from 29 types. | | | | | | | | | | | | | | | | | | |
| 27 | XOF (Ignore KeyOff) | Sets whether to ignore KeyOff or not. Place a check in the check box to ignore KeyOff. KeyOff does not cause the change of state. | | | | | | | | | | | | | | | | | | |
| 28 | SUS (Sustain) | Sets whether to allow the rate change after KeyOff is allowed or not. When check is placed in the check box and Hold 1 (damper) information of MIDI message is received, SR continues after KeyOff. <div>For making effective the hold1 (damper) of MIDI message, be sure to set SUS to ON.</div> | | | | | | | | | | | | | | | | | | |
| 29 | KSR (Rate scaling) | Sets rate key scale ON/OFF. Place a check in the check box to enable setting of KSL. Key scale ON/OFF of the rate can be set up by checking this box. By the natural musical instrument, the standup and falling of sound become early as a pitch becomes high in general. The key scale of the rate simulates this phenomenon. | | | | | | | | | | | | | | | | | | |
| 30 | EAM (AM modulation) | Sets amplitude modulation ON/OFF. Place a check in the check box to enable setting of DAM. | | | | | | | | | | | | | | | | | | |
| 31 | EVB (Vibrato modulation) | Sets vibrato modulation ON/OFF. Place a check in the check box to enable setting of DVB. <div>Be sure to set EVB to ON to enable modulation of MIDI message.</div> | | | | | | | | | | | | | | | | | | |
| 32 | WS15/23/31 (Wave 15/23/31) | Allows decision of arbitrary basic waveform. Reads 1024 samples from a sound file of 16 bit monaural (WAVE , AIFF). Set WS to 15 (23/31). Click the Load button of WS15 (23/31) to read a sound file Pressing “Clear” to clear each wave. <div><div><div>WS 15</div><div>[RAM]</div><div>WS15 Load... Clear</div><div>WS23 Load... Clear</div><div>WS31 Load... Clear</div></div><div><div>WS 15</div><div></div><div>WS15 Load... Clear</div><div>WS23 Load... Clear</div><div>WS31 Load... Clear</div></div></div> <div><The cautions at the time of Clear FM user basic waveform> A user basic waveform is deleted from all the voices that the user basic waveform which Load in FM voice editing dialog is shared by the voice which set up the same basic waveform, and share a waveform between clear operations. Please perform SMAF preservation after checking the use situation of a basic waveform by Voice Assign Map, when a user basic waveform is used.</div> | | | | | | | | | | | | | | | | | | |

4.18.2. List of FM Fundamental Waveform

| | | | | | | | |
|----|--|----|--|----|--|----|--------------------------|
| 0 | | 1 | | 2 | | 3 | |
| 4 | | 5 | | 6 | | 7 | |
| 8 | | 9 | | 10 | | 11 | |
| 12 | | 13 | | 14 | | 15 | Use any waveform on SRAM |
| 16 | | 17 | | 18 | | 19 | |
| 20 | | 21 | | 22 | | 23 | Use any waveform on SRAM |
| 24 | | 25 | | 26 | | 27 | |
| 28 | | 29 | | 30 | | 31 | Use any waveform on SRAM |

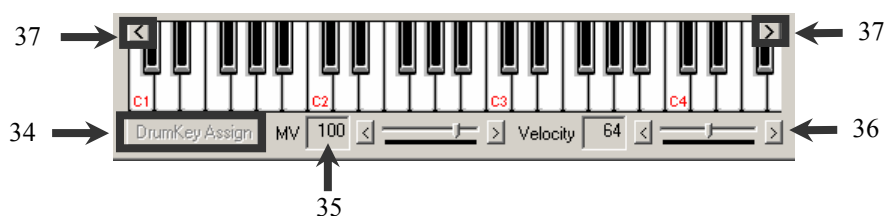
FM Fundamental Wave Form

No. 33-36 Keyboard

The voice under editing can be monitored by clicking the keyboard.

Display of normal voice being edited

In the case of normal voice, it generates higher musical interval as going the right side of the keyboard, and lower musical interval as going toward the left side.

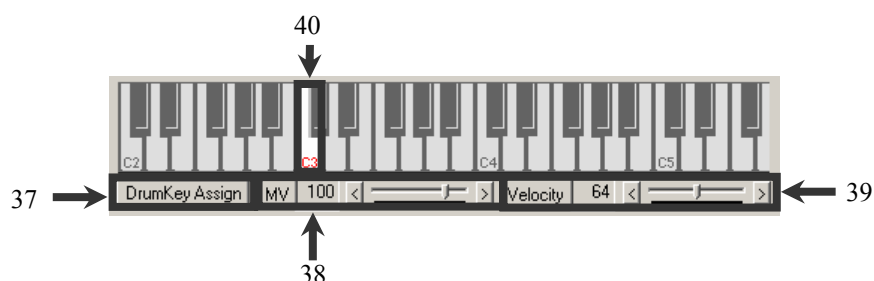



| No. | Function name | Contents |
|-----|---------------------|--|
| 34 | DrumKey Assign | It is not used when editing normal voice. (It is valid only when editing drum voice) |
| 35 | MV (Master Volume) | Master volume value when monitoring by the keyboard can be changed. |
| 36 | Velocity (Velocity) | Velocity value when monitoring by the keyboard can be changed. |
| 37 | Scrolling button | By pushing this button, the displayable range of keyboard can be changed. <ul style="list-style-type: none"> Click of right side button displays higher interval. Click of left side button displays lower interval. |

No. 38-41 Keyboard

Display of drum voice edited

In the case of drum voice, it generates only when Note No. under editing is clicked.



| No. | Function name | Contents |
|-----|---------------------|---|
| 37 | DrumKey Assign | <p>By pushing this switch, it can generate the drum voice in higher musical interval as going toward the right side of keyboard, and in lower musical interval as going toward the left side. Please find out your favorite key and set it as a DrumKey.</p> <p>(DrumKey Assign shown in the following figure means the switch is being pushed.)</p>  <p>All keys can be generated by pushing the DrumKey Assign switch.</p> |
| 38 | MV (Master Volume) | Master volume value when monitoring by the keyboard can be changed. |
| 39 | Velocity (Velocity) | Velocity value when monitoring by the keyboard can be changed. |
| 40 | Key | Displays only the note number under editing. |

4.18.3. PCM Voice Edit Parameter

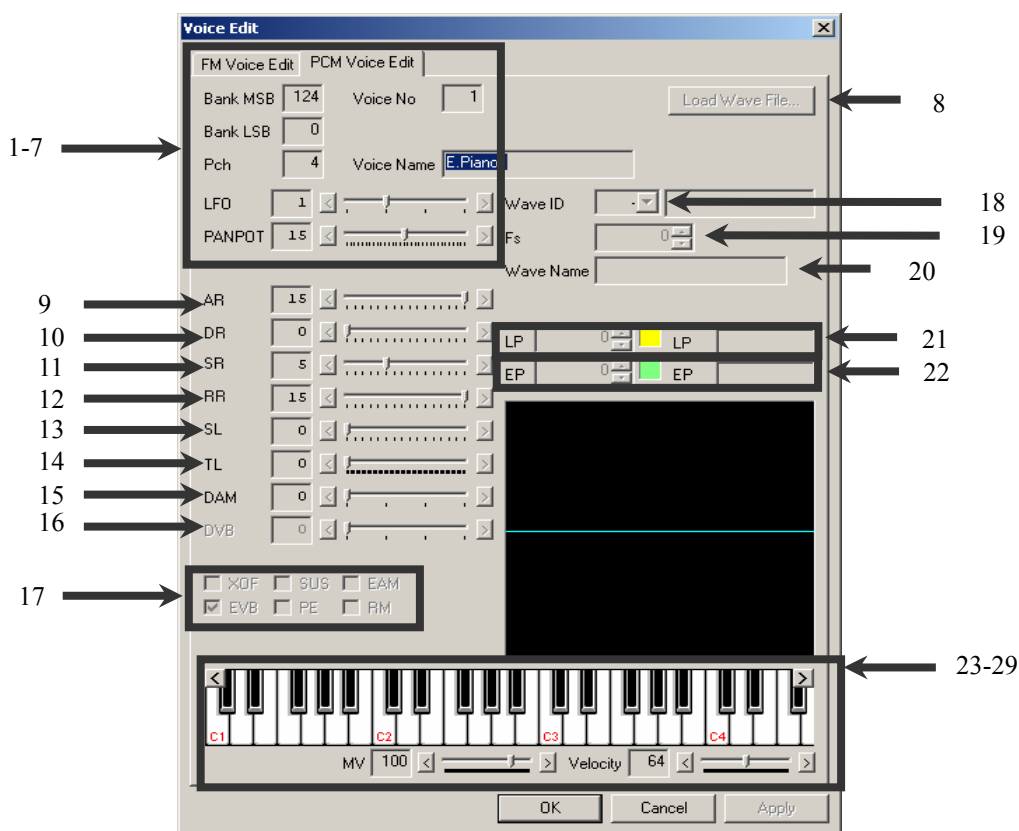
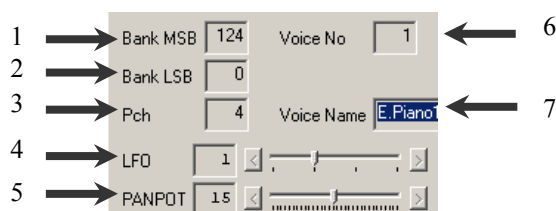


Figure. 4-36 PCM Voice Edit Parameter

No.1-7



| No. | Function name | Contents |
|-----|---------------|---|
| 1 | Bank MSB | Displays BankSelect MSB in which the voices being edited exist. It cannot be changed here. |
| 2 | Bank LSB | Displays BankSelect LSB in which the voices being edited exist. |
| 3 | Pch | Displays and changes program change for the voices being edited. |
| 4 | LFO | Sets LFO frequency that is used for each voice. LFO= 0 : 1.8 Hz, LFO= 1 : 4.0 Hz LFO= 2 : 5.9 Hz, LFO= 3 : 7.0 Hz |
| 5 | Panpot | Sets right-left balance for each channel. (0...15...31) The smaller value, the further it pans to the left, or the larger value, the further it pans to the right. |
| 6 | Voice No. | Displays the voice number being edited with Voice Assign Map. |
| 7 | Voice Name | Sets the voice name being edited. |

No.8-23

| No. | Function name | Contents |
|-----|-----------------------------------|---|
| 8 | Load Wave File | <p>Sound file (AIFF, WAVE) of up to 48 kHz can be read with 4bitADPCM (16bitADPCM) or 8bit (8bitPCM, 16bitPCM).</p> <p>The waveform that has been read is assigned to NoteNo.60 (C key) and can be played upto 48kHz.</p> <p>“Example” When a 24000Hz sound file is read</p> <p>Playing lower key makes FS lower or playing higher key makes FS higher with respect to C key (24000Hz) of NoteNo.60.</p> |
| | Detach Wave File | <p>Press this switch to delete the waveform that has been read with “Load Wave File.”</p> <div data-bbox="569 573 1372 864"> <p>When a waveform is read, “Load Wave File” button changes to “Detach Wave File” button.</p> </div> |
| 9 | AR (Attack Rate) | Attack Rate is the time from the starting of tone generation (-96dB) to the time of maximum volume (0 dB). |
| 10 | DR (Decay Rate) | Decay Rate is the decay time from the moment the maximum volume (0dB) to the moment Sustain Level (SL). |
| 11 | SR (Sustain Rate) | Sustain Rate designates the rate of decay from the moment a Sustain Level is attained. Unlike other rate setting, setting this to “0” causes continuation of the Sustain Level. |
| 12 | RR (Release Rate) | Release Rate is the time from key off to the moment the silent state (-96 db) is attained. When a check is placed in the check box of SUS, the setting is ignored. |
| 13 | SL (Sustain Level) | The Sustain Level is the one at which Decay Rate changes to Release Rate for decaying tone, or the level at which volume of a continuous tone is sustained. |
| 14 | TL (Total Level) | Sets the level of envelope. |
| 15 | DAM (Depth of AM modulation) | Sets the depth of amplitude modulation (AM). DAM= 0 : 1.3 dB, DAM= 1 : 2.8 dB DAM= 2 : 5.8 dB, DAM= 3 : 11.8 dB |
| 16 | DVB (Depth of vibrato modulation) | DVB= 0 : 3.4 cents, DVB= 1 : 6.7 cents DVB= 2 : 13.5 cents, DVB= 3 : 26.8 cents |
| 17 | XOF (Ignore KeyOff) | Sets whether to ignore KeyOff or not. Place a check in the check box to ignore KeyOff. KeyOff does not cause the change of state. |
| | SUS (Sustain) | Sets whether to allow the rate change after KeyOff or not. When check is placed in the check box and Hold 1 (damp) information of MIDI message is received, SR continues after KeyOff. |
| | | Be sure to set EVB to on to enable modulation of MIDI message. |
| | EAM (Amplitude modulation On/Off) | Sets amplitude modulation ON/OFF. Place a check in the check box to enable setting of DAM. |
| | EVB (Vibrato modulation On/Off) | Sets vibrato modulation ON/OFF. Place a check in the check box to enable setting of DVB. |
| | | Sets vibrato modulation ON/OFF. Place a check in the check box to enable setting of DVB. |
| 18 | PE (Pan-enable) | Place a check in the check box to disable pan setting of the control change and to enable the value of panpot of voices. |
| | RM (Designation of ROM/RAM) | Selects ROM or RAM for waveforms that are used. When ROM is designated, a waveform can be selected from seven waveform list in the ROM at Wave ID. When RAM is designated, arbitrary waveform can be designated from the load wave file. |
| 18 | Wave ID | For MA-5, multiple PCM waveforms can be read and stored. The management number can be displayed and selected. |

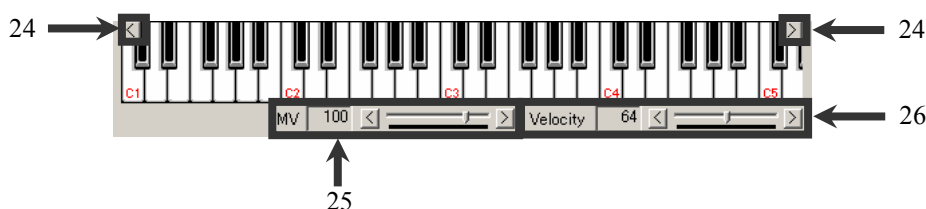
| No. | Function name | Contents |
|-----|---------------|--|
| 19 | Fs | Displays the frequencies of waveforms that have been read. On MA-5 Authoring Tool, displays the frequency when flipping NoteNo.60 (<i>C key</i>). Changing the value changes the pitch. |
| 20 | Wave Name | Displays the names of waveforms that have been read. <div>Wave Name is not displayed on Wave ID field immediately after attaching Wave Name. Be sure to re-open Voice Edit to display it.</div> |
| 21 | LP | Designates a loop point for loop reproduction. In addition, a peak factor at the following point was displayed. 4bits ADPCM :Loop Point 8 bits PCM:Loop Point + 1 |
| 22 | EP | Designates reproduction end point and loop reproduction loop End Point. In addition, a peak factor at the following points was displayed. 4 bits ADPCM :End Point -1 8 bits PCM :End Loop Point <div>It does not pronounce, if the value is "0".</div> |

No.22 to 31

The voice under editing can be monitored by clicking the keyboard.

Display of normal voice being edited

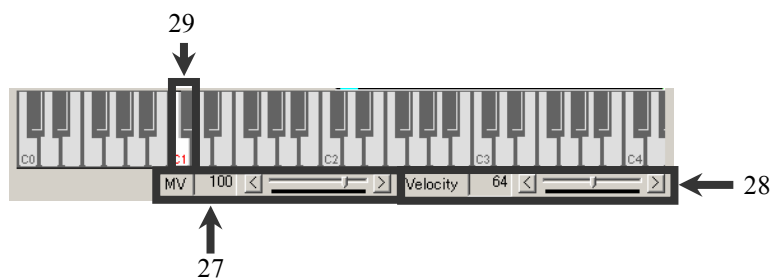
In the case of normal voice, it generates higher musical interval as going toward the right side of keyboard, and lower musical interval as going toward the left side.



| No. | Function name | Contents |
|-----|---------------------|---|
| 24 | Scrolling button | By pushing this button, the displayable range of keyboard can be changed. <ul style="list-style-type: none"> Click of right side button displays higher interval. Click of left side button displays lower interval. |
| 25 | MV (Master Volume) | Master volume value when monitoring by the keyboard can be changed. |
| 26 | Velocity (Velocity) | Velocity value when monitoring by the keyboard can be changed. |

Display of drum voice being edited

In the case of drum voice, it generates only when the Note number which is being edited is clicked.



| No. | Function name | Contents |
|-----|---------------------|---|
| 27 | MV (Master Volume) | Master volume value when monitoring by the keyboard can be changed. |
| 28 | Velocity (Velocity) | Velocity value when monitoring by the keyboard can be changed. |
| 29 | Key | Only the Note number being edited can be displayed. |

4.18.4. LP/EP Automatic Control Function

At the time of displaying a Voice Edit of existing PCM voice, if there are any uncorrected values which are set on it, the following confirmation messages will be displayed.

“Automatically operated- Loop and/or End Point adjusted according to PCM mode.”

Then, the uncorrected values are rounded to a correct value automatically.

Example of rounding the sampling number “2000”,

<with 4bit ADPCM>

In case of the OneShot(LoopPoint=EndPoint)

In case of (LoopPoint \geq Sample number) or (EndPoint \geq Sample number)

LoopPoint = EndPoint = Sample - 1

ex) LP=2000/EP=2000 \rightarrow LP=1999/EP=1999

LP=2000/EP=2001 \rightarrow LP=1999/EP=1999

In the case in which only LoopPoint is outside of the range.

LoopPoint = EndPoint

ex) LP=2001/EP=1500 \rightarrow LP=1500/EP=1500

In the case in which only EndPoint is outside of the range.

EndPoint = Sample - 1

ex) LP=1500/EP=2001 \rightarrow LP=1500/EP=2000

<with 8bits PCM>

In case of the OneShot(LoopPoint=EndPoint)

In case of (LoopPoint \geq Sample -1) or (EndPoint \geq Sample -1)

LoopPoint = EndPoint = Sample -2

ex) LP=2000/EP=2000 \rightarrow LP=1998/EP=1998

In the case in which only LoopPoint is outside of the range.

LoopPoint = EndPoint

ex) LP=2001/EP=1500 \rightarrow LP=1500/EP=1500

In the case in which only EndPoint is outside of the range.

EndPoint = Sample - 1

ex) LP=1500/EP=2001 \rightarrow LP=1500/EP=1999

4.18.5. AL Voice Edit Parameter

Only for MA-5 Mode

Double-click user voice name on the voice list window to display voice edit window, where double-clicking on AL Voice Edit tab can set AL voice parameter.

To open voice AL voice edit on the voice assign map, the channel in which voices for which AL voice is to be used are inputted must be designated as AL channel. By placing a check in “AL” field of score window can be set as AL voice. Voices of AL channel are generated as monaural.

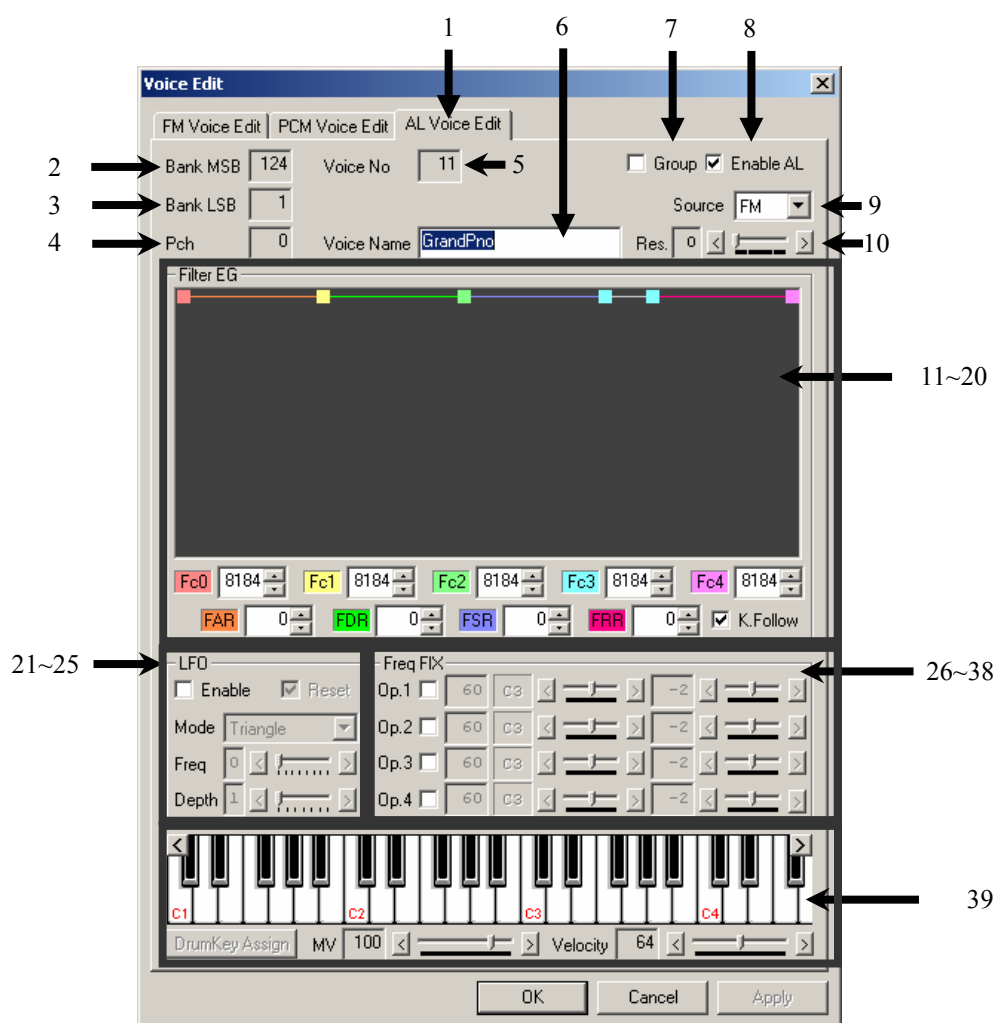


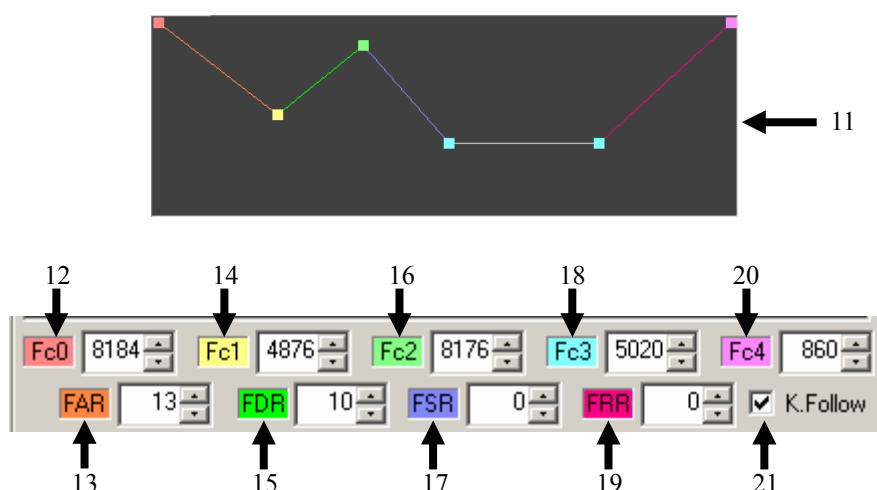
Figure. 4-37 AL Voice Edit Parameter

No.1 to 10

| No. | Name | Description |
|-----|--------------------|--|
| 1 | AL Voice Parameter | Switches to AL Voice Parameter. Only when a voice which is assigned as AL voice was selected, this tab will be appeared. |
| 2 | Bank MSB | Displays bank MSB in which the voices being edited exist. |
| 3 | Bank LSB | Displays bank LSB in which the voices being edited exist. |

| No. | Name | Description |
|-----|--|--|
| 4 | Pch (Program Change) | Displays program change for the voices being edited. |
| 5 | Voice No (Voice Number) | Displays the voice number being edited with Voice Assign Map. |
| 6 | Voice Name | Sets the voice name being edited. |
| 7 | Group display (Group Setting) | For voices of program change that exist in the channels designated by AL setting, this parameter designates whether the same AL voice parameter is used for all voice, "ON", or AL voice parameters are used for each voice individually "OFF". When Paste operation is performed for voice parameters for which Group is set on Voice Assign Map, only AL voice parameter is changed for all voices of program change that exist in the channel designated by AL setting. For FM/PCM voice parameters, only the relevant voices are changed. |
| 8 | Enable AL display (AL enable setting) | Designates whether AL is enabled, "ON", or disabled "OFF". |
| 9 | Source display (Source selection) | Designates whether AI voice parameter is attached to FM voice parameter, "FM", AI voice parameter is attached to PCM voice parameter, "PCM", or AI voice parameter is attached to Noise, "Noise." |
| 10 | Resonance (Resonance setting) | Designates resonance. |

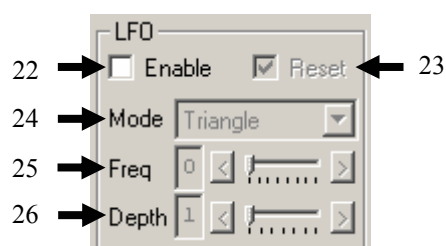
No.11 to 21 (Filter EG)



| No. | Name | Description |
|-----|---|--|
| 11 | Filter setting graph display | Shows Fc0 to Fc4, FAR, FDR, FSR and FRR on the sequential line graph. Click and drag the point of Fc0 to Fc4 with mouse to directly edit the graph. FAR, FDR, FSR and FRR change in accordance with the edition. |
| 11 | Fc0 display (KeyOn cut off frequency) | Designates cutoff frequency change rate in attack state. |
| 12 | FAR (Attack state cutoff frequency change rate) | Designates cutoff frequency change rate in attack state. |
| 13 | Fc1 display (Attack end cutoff frequency) | Designates cutoff frequency at attack end. |
| 14 | FDR display (Decay state cutoff frequency change rate) | Designates cutoff frequency change rate in decay state. |
| 15 | Fc2 display (Decay end cutoff frequency) | Designates cutoff frequency at decay end. |
| 16 | FSR display (Sustain state cutoff frequency change rate) | Designates cutoff frequency change rate in sustain state. |

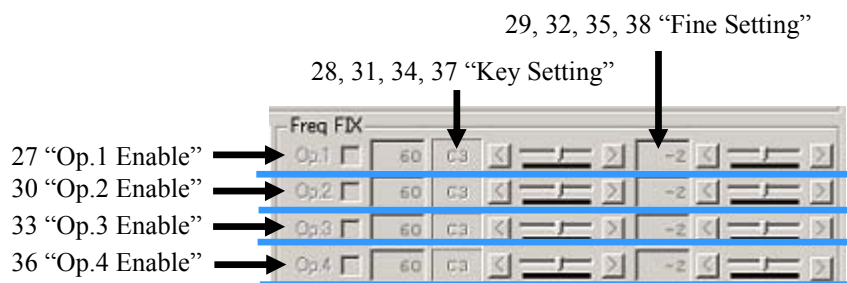
| No. | Name | Description |
|-----|---|--|
| 17 | Fc3 display (KeyOff cutoff frequency) | Designates cutoff frequency at KeyOff start. |
| 18 | FRR display (Release state cutoff frequency change rate) | Designates cutoff frequency change rate in release state. |
| 19 | Fc4 display (Release cutoff frequency) | Designates cutoff frequency at release. |
| 20 | Key Follow (Key follow setting) display | Designates whether the setting of key follow for cutoff frequency (increases cutoff frequency according to the advance to upper interval). |

No.22 to 26 (LFO)



| No. | Name | Description |
|-----|--|--|
| 22 | LFO Enable display (LFO setting) | Designates whether LFO is enabled, " ON ", or disabled, " OFF " for cut off frequency. When a check is placed, LFO is enabled, where Freq, Depth or Mode can be changed. When a check is not placed, there parameters cannot be changed. |
| 23 | LFO Reset display (LFO reset setting) | Designates whether initial phase of LFO is reset, " ON " or not reset, " OFF ". When LFO Mode is "S&H", CutOff frequency randomly changes, therefore this Reset function does not effect. |
| 24 | LFO Mode display (LFO mode setting) | Designates mode of LFO. |
| 25 | LFO Freq. display (LFO frequency setting) | Selects frequency of LFO. |
| 26 | LFO Depth display (LFO depth setting) | Selects depth of cutoff frequency of LFO. |

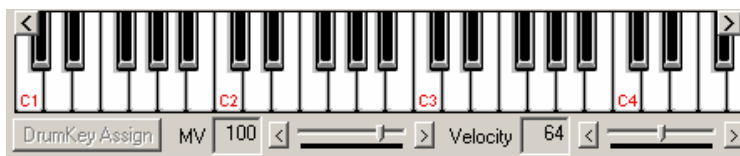
No.27 to 38 (Freq Fix)



| No. | Name | Description |
|-----|--|---|
| LFO | | |
| 27 | Freq.FIX 1 Enable (Fixed frequency enabled setting) | Designates whether fixed frequency of operator 1 is enabled, " ON " or disabled, " OFF ." |

| No. | Name | Description |
|-----|---|--|
| | operator 1) | When OFF, Key and Fine cannot be designated. |
| 28 | Freq. FIX 1 Key (Fixed frequency key setting operator 1) | Designates key number of fixed frequency of operator 1. |
| 29 | Freq. FIX 1 Fine (Fixed frequency fine setting operator 1) | Designates fine pitch of fixed frequency of operator 1. |
| 30 | Freq.FIX 2 Enable (Fixed frequency enabled setting operator 2) | Designates whether fixed frequency of operator 2 is enabled, “ ON ” or disabled, “ OFF .” When OFF, Key and Fine cannot be designated. |
| 31 | Freq. FIX 2 Key (Fixed frequency key setting operator 2) | Designates key number of fixed frequency of operator 2. |
| 32 | Freq. FIX 2 Fine (Fixed frequency fine setting operator 2) | Designates fine pitch of fixed frequency of operator 2. |
| 33 | Freq.FIX 3 Enable (Fixed frequency enabled setting operator 3) display | Designates whether fixed frequency of operator 3 is enabled, “ ON ” or disabled, “ OFF .” When OFF, Key and Fine cannot be designated. |
| 34 | Freq. FIX 3 Key (Fixed frequency key setting operator 3) | Designates key number of fixed frequency of operator 3. |
| 35 | Freq. FIX 3 Fine (Fixed frequency fine setting operator 3) | Designates fine pitch of fixed frequency of operator 3. |
| 36 | Freq.FIX 4 Enable (Fixed frequency enabled setting operator 4) | Designates whether fixed frequency of operator 4 is enabled, “ ON ” or disabled, “ OFF .” When OFF, Key and Fine cannot be designated. |
| 37 | Freq. FIX 4 Key (Fixed frequency key setting operator 4) | Designates key number of fixed frequency of operator 4. |
| 38 | Freq. FIX 4 Fine (Fixed frequency fine setting operator 4) | Designates fine pitch of fixed frequency of operator 4. The setting value of Freq.FIX is recalculated, when the “OK” button of Voice Edit is pushed, or when it moves to FM Voice Edit tab. Therefore, although some difference will come out of the setting value of Freq. FIX compared with the value set up first when Voice Edit is opened once again, playback sound becomes the same. |

No.39 (Keyboard)



| No. | Name | Description |
|-----------------|----------|--|
| Keyboard | | |
| 39 | Keyboard | By clicking a keyboard, voices during a editing can be displayed. For details about Keyboard, refer to the “ Keyboard ” in “ FM Voice Edit Parameter. ” |

4.18.6. HV Voice Edit Parameter

Only for MA-5 Mode

In the state which HV voice list is displayed on the Voice List Window, double-click the voice name to be edited. Then, HV Voice Edit window appears.

This window also can be opened by double-clicking the voice name to be edited on HV Extend Voice Map.

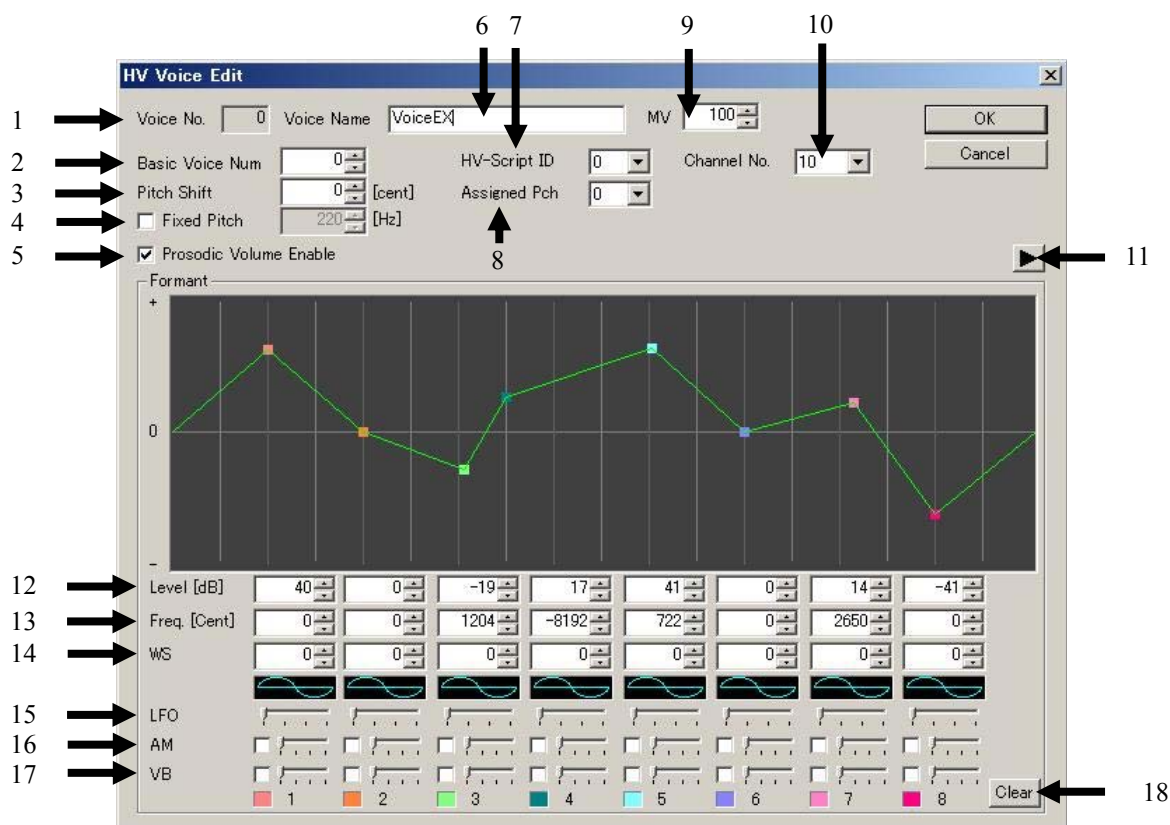



Figure. 4-38 HV Voice Edit Parameter

| No. | Name | Description |
|-----|--|--|
| 1 | Voice No./Pch# | Display may differ by which window, HV Extend Voice Map or HV Voice List, was opened. “Pch#” appears when this window was opened from HV Extend Voice Map, and it shows the number of the extended voice that is under editing. It is also possible to edit other extended voice by changing the number. About the way to use, refer “Assigned Pch No.” in this section. When this window was opened from HV Voice List, the item name “Pch#” is changed to “Voice No.”, and it shows the number of the voice. In this case, number cannot be changed. To edit other voice of HV Voice List, double-click the voice to edit on the HV Voice List |
| 2 | Basic Voice Num (HV Basic Voice Number) | All HV voice is created in the order of following, first select the base from two presets HV Basic Voice, and then edit it. Select and designate HV Basic Voice #0 (<i>Male default voice</i>) or HV Basic Voice #1 (<i>Female default voice</i>). |
| 3 | Pitch Shift | Sets Pitch shift (<i>cent</i>) from Basic Voice. Setting value : -8192 to 8191 cent |
| 4 | Fixed Pitch | Always pronounces in a certain pitch, when its check box is checked. The height is set by “Hz.” |

| No. | Name | Description |
|-----|---|---|
| | | Setting value : 0 to 48,000Hz |
| 5 | Prosodic Volume Enable | Pronounces according to the volume-shift-order in HV-Script by being checked. |
| 6 | Voice Name | Sets the voice name. |
| 7 | HV-Script ID | Volume can be edited while playing HV-Script. Designate the ID number, which is registered at HV-Script Assign Map to select the script to play. |
| 8 | Assigned Pch No. (Program Change number allocation) | Designates the Program Change number which HV-Script to play is using. Displayed when this window is opened from HV Voice List. Setting value : 0 to 15 Program Change number, which needed to designate the voice to use to play, is attached to HV-Script. Designate Pch# or Assigned Pch No. to match to the Program Change number of script, which is designated in HV-Script ID. Then, you can edit voice with checking by actually hearing the playing script. Conversely, if you designate a script, which is not matched to the Program Change number, by the ID, editing voice would not be played. When the voice does not change even though parameter is changed in various ways, check Pch# and Assigned Pch No. Moreover, depending on HV script, it may have more than two Program Change. In this case, edit voice one by one with changing Pch# or Assigned Pch No. |
| 9 | MV (Master Volume) | Displays the value of master volume. Setting Range: 0 to 127, Default: 100 |
| 10 | Channel No. | Designates the channel which transmits voice parameters being edited. |
| 11 | Play Button  | Plays the script which designated by HV-Script ID. |
| 12 | Level "dB" | Sets Formant level variation from Basic Voice. Setting value : -64 to 63dB Default value : 0dB |
| 13 | Freq. "Cent" (Frequency "Cent") | Sets Formant frequency variation from Basic Voice. Setting value : -8192 to 8191 cent Default value : 0 cent "Level" and "Freq." also can be set by dragging the small square, which is connected with the green straight lines in the graph. There are 8 small squares related to Formant, and they are classified by color. In the graph, the vertical axis shows "Level", and the horizontal axis shows "Freq." |
| 14 | WS | Selects a waveform that would be a material to create Formant. An image of selected waveform is also displayed. Setting value : 0 to 14, 16 to 22, 24 to 30 Default value : 0 Waveform 15, 23, and 31 cannot be selected. (OK button will be un-usable) |
| 15 | LFO | Sets LFO frequency. Following 4 frequencies are available. Frequency becomes higher as it goes to the right from the left of the slider. Setting value : 2.08Hz (<i>leftmost</i>), 4.17Hz, 6.25Hz, 12.50Hz (<i>rightmost</i>), Default value : 2.08Hz |
| 16 | AM (Depth of AM modulation) | Slider setting becomes available by placing a check into the check box, then makes AM modulation for Formant level by LFO. Following 4 depths of modulation is available. The depth becomes deeper as it goes to the right from the left of the slider. Setting value : ± 4.5 dB (<i>leftmost</i>), ± 9.0 dB, ± 13.5 dB, ± 18.0 dB (<i>rightmost</i>) Default value : ± 4.5 dB However, default does not check the check box, so it does not modulate. |
| 17 | VB (Depth of vibrato) | Slider setting becomes available by placing a check into the check box, then makes FM modulation for Formant frequency by LFO. Following 4 depths of vibrato is available. The depth becomes deeper as it goes to the right from the left of the slider. Setting value : ± 240 cents (<i>leftmost</i>), ± 480 cents, ± 960 cents, ± 1440 cents (<i>rightmost</i>). Default value : ± 240 cents However, default does not check the check box, so it does not vibrato. |
| 18 | Clear | All Formant setup of eight HV is returned to a default value. |

5. Supplemental Information

5.1. Voice List

5.1.1. MA-5 Native Normal Voice Map (FM16 mode 0 to 63)

| Bank MSB | 124 | 124 | 124 | 124 | 124 | 124 |
|----------|----------|-----|------|-----|------|-----|
| Bank LSB | 0 | 1 | 2 | 3~7 | 8 | 9 |
| Pch# | Inst | Typ | Inst | Typ | Inst | Typ |
| 0 | GrandPno | F4 | User | A | User | A |
| 1 | BritePno | F4 | User | A | User | A |
| 2 | E.GrandP | F4 | User | A | User | A |
| 3 | HnkvTonk | F4 | User | A | User | A |
| 4 | E.Piano1 | F4 | User | A | User | A |
| 5 | E.Piano2 | F4 | User | A | User | A |
| 6 | Harpsi. | F4 | User | A | User | A |
| 7 | Clavi. | F4 | User | A | User | A |
| 8 | Celesta | F4 | User | A | User | A |
| 9 | Glocken | F4 | User | A | User | A |
| 10 | MusicBox | F4 | User | A | User | A |
| 11 | Vibes | F4 | User | A | User | A |
| 12 | Marimba | F4 | User | A | User | A |
| 13 | Xylophon | F4 | User | A | User | A |
| 14 | TubulBel | F4 | User | A | User | A |
| 15 | Dulcimer | F4 | User | A | User | A |
| 16 | DrawOrgn | F4 | User | A | User | A |
| 17 | PercOrgn | F4 | User | A | User | A |
| 18 | RockOrgn | F4 | User | A | User | A |
| 19 | ChrchOrg | F4 | User | A | User | A |
| 20 | ReedOrgn | F4 | User | A | User | A |
| 21 | Acordion | F4 | User | A | User | A |
| 22 | Harmnica | F4 | User | A | User | A |
| 23 | TangoAcd | F4 | User | A | User | A |
| 24 | NylonGtr | F4 | User | A | User | A |
| 25 | SteelGtr | F4 | User | A | User | A |
| 26 | Jazz Gtr | F4 | User | A | User | A |
| 27 | CleanGtr | F4 | User | A | User | A |
| 28 | Mute.Gtr | F4 | User | A | User | A |
| 29 | Ovrdrive | F4 | User | A | User | A |
| 30 | Dist.Gtr | F4 | User | A | User | A |
| 31 | GtrHarmo | F4 | User | A | User | A |
| 32 | Aco.Bass | F4 | User | A | User | A |
| 33 | FngrBass | F4 | User | A | User | A |
| 34 | PickBass | F4 | User | A | User | A |
| 35 | Fretless | F4 | User | A | User | A |
| 36 | SlapBas1 | F4 | User | A | User | A |
| 37 | SlapBas2 | F4 | User | A | User | A |
| 38 | SynBass1 | F4 | User | A | User | A |
| 39 | SynBass2 | F4 | User | A | User | A |
| 40 | Violin | F4 | User | A | User | A |
| 41 | Viola | F4 | User | A | User | A |
| 42 | Cello | F4 | User | A | User | A |
| 43 | ContraBs | F4 | User | A | User | A |
| 44 | Trem.Str | F4 | User | A | User | A |
| 45 | Pizz.Str | F4 | User | A | User | A |
| 46 | Harp | F4 | User | A | User | A |
| 47 | Timpani | F4 | User | A | User | A |
| 48 | Strings1 | F4 | User | A | User | A |
| 49 | Strings2 | F4 | User | A | User | A |
| 50 | Syn.Str1 | F4 | User | A | User | A |
| 51 | Syn.Str2 | F4 | User | A | User | A |
| 52 | ChoirAah | F4 | User | A | User | A |
| 53 | VoiceOoh | F4 | User | A | User | A |
| 54 | SynVoice | F4 | User | A | User | A |
| 55 | Orch.Hit | F4 | User | A | User | A |
| 56 | Trumpet | F4 | User | A | User | A |
| 57 | Trombone | F4 | User | A | User | A |
| 58 | Tuba | F4 | User | A | User | A |
| 59 | Mute.Trp | F4 | User | A | User | A |
| 60 | Fr.Horn | F4 | User | A | User | A |
| 61 | BrasSect | F4 | User | A | User | A |
| 62 | SynBras1 | F4 | User | A | User | A |
| 63 | SynBras2 | F4 | User | A | User | A |

5.1.2. MA-5 Native Normal Voice Map (FM16Mode 64 to 127)

| Bank MSB | 124 | 124 | 124 | 124 | 124 | 124 |
|----------|-----------|-----------------|------|-----|------|-----|
| Bank LSB | 0 | 1 | 2 | 3~7 | 8 | 9 |
| | Default | User Assignable | | | | |
| Pch# | Inst | Typ | Inst | Typ | Inst | Typ |
| 64 | SprnoSax | F4 | User | A | User | A |
| 65 | Alto Sax | F4 | User | A | User | A |
| 66 | TenorSax | F4 | User | A | User | A |
| 67 | Bari.Sax | F4 | User | A | User | A |
| 68 | Oboe | F4 | User | A | User | A |
| 69 | Eng.Horn | F4 | User | A | User | A |
| 70 | Bassoon | F4 | User | A | User | A |
| 71 | Clarinet | F4 | User | A | User | A |
| 72 | Piccolo | F4 | User | A | User | A |
| 73 | Flute | F4 | User | A | User | A |
| 74 | Recorder | F4 | User | A | User | A |
| 75 | PanFlute | F4 | User | A | User | A |
| 76 | Bottle | F4 | User | A | User | A |
| 77 | Shakhchi | F4 | User | A | User | A |
| 78 | Whistle | F4 | User | A | User | A |
| 79 | Ocarina | F4 | User | A | User | A |
| 80 | SquareLd | F4 | User | A | User | A |
| 81 | Saw.Lead | F4 | User | A | User | A |
| 82 | CalioP.Ld | F4 | User | A | User | A |
| 83 | ChiffLd | F4 | User | A | User | A |
| 84 | CharanLd | F4 | User | A | User | A |
| 85 | Voice Ld | F4 | User | A | User | A |
| 86 | Fifth Ld | F4 | User | A | User | A |
| 87 | Bass &Ld | F4 | User | A | User | A |
| 88 | NewAgePd | F4 | User | A | User | A |
| 89 | Warm Pad | F4 | User | A | User | A |
| 90 | PolySyPd | F4 | User | A | User | A |
| 91 | ChoirPad | F4 | User | A | User | A |
| 92 | BowedPad | F4 | User | A | User | A |
| 93 | MetalPad | F4 | User | A | User | A |
| 94 | Halo Pad | F4 | User | A | User | A |
| 95 | SweepPad | F4 | User | A | User | A |
| 96 | Rain | F4 | User | A | User | A |
| 97 | SoundTrk | F4 | User | A | User | A |
| 98 | Crystal | F4 | User | A | User | A |
| 99 | Atmosphr | F4 | User | A | User | A |
| 100 | Bright | F4 | User | A | User | A |
| 101 | Goblins | F4 | User | A | User | A |
| 102 | Echoes | F4 | User | A | User | A |
| 103 | Sci-Fi | F4 | User | A | User | A |
| 104 | Sitar | F4 | User | A | User | A |
| 105 | Banjo | F4 | User | A | User | A |
| 106 | Shamisen | F4 | User | A | User | A |
| 107 | Koto | F4 | User | A | User | A |
| 108 | Kalimba | F4 | User | A | User | A |
| 109 | Bagpipe | F4 | User | A | User | A |
| 110 | Fiddle | F4 | User | A | User | A |
| 111 | Shanai | F4 | User | A | User | A |
| 112 | TnklBell | F4 | User | A | User | A |
| 113 | Agogo | F4 | User | A | User | A |
| 114 | SteelDrm | F4 | User | A | User | A |
| *1 115 | WoodBlok | F4 | User | A | User | A |
| *2 116 | TaikoDrm | F4 | User | A | User | A |
| *3 117 | MelodTom | F4 | User | A | User | A |
| *4 118 | Syn.Drum | F4 | User | A | User | A |
| *4 119 | RevCymb | F4 | User | A | User | A |
| 120 | FretNoiz | F4 | User | A | User | A |
| 121 | BrthNoiz | F4 | User | A | User | A |
| *5 122 | Seashore | F4 | User | A | User | A |
| *6 123 | Tweet | F4 | User | A | User | A |
| *7 124 | Telephone | F4 | User | A | User | A |
| *7 125 | Helicptr | F4 | User | A | User | A |
| *6 126 | Applause | F4 | User | A | User | A |
| *5 127 | Gunshot | F4 | User | A | User | A |

*1:50cent/halfnote, #69=F#4

*2:50cent/halfnote, #69=A2

*3:50cent/halfnote, #69=C#4

*4:50cent/halfnote

*5:20cent/halfnote

*6:5cent/halfnote

*7:10cent/halfnote

The voice, which is set to Pch# with
 “*” is treated as drum voice by key
 control judging. (User Bank is also.)

(*) Type F2: FM 2 Operator, F4: FM 4 Operator, P: PCM, A: F2/F4/P Assignable

5.1.3. MA-5 Native Normal Voice Map (FM32 mode 0 to 63)

| Bank MSB | 124 | | 124 | | 124 | | 124 | | 124 | | 124 | |
|----------|----------|-----|-----------------|-----|------|-----|-------|------|-----|------|-----|--|
| Bank LSB | 0 | | 1 | | 2 | | 3~7 | | 8 | | 9 | |
| | Default | | User Assignable | | | | | | | | | |
| Pch# | Inst | Tvp | Inst | Tvp | Inst | Tvp | | Inst | Tvp | Inst | Tvp | |
| 0 | GrandPno | F2 | User | A | User | A | • • • | User | A | User | A | |
| 1 | BritePno | F2 | User | A | User | A | • • • | User | A | User | A | |
| 2 | E.GrandP | F2 | User | A | User | A | • • • | User | A | User | A | |
| 3 | HnkyTonk | F2 | User | A | User | A | • • • | User | A | User | A | |
| 4 | E.Piano1 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 5 | E.Piano2 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 6 | Harpsi. | F2 | User | A | User | A | • • • | User | A | User | A | |
| 7 | Clavi. | F2 | User | A | User | A | • • • | User | A | User | A | |
| 8 | Celesta | F2 | User | A | User | A | • • • | User | A | User | A | |
| 9 | Glocken | F2 | User | A | User | A | • • • | User | A | User | A | |
| 10 | MusicBox | F2 | User | A | User | A | • • • | User | A | User | A | |
| 11 | Vibes | F2 | User | A | User | A | • • • | User | A | User | A | |
| 12 | Marimba | F2 | User | A | User | A | • • • | User | A | User | A | |
| 13 | Xylophon | F2 | User | A | User | A | • • • | User | A | User | A | |
| 14 | TubulBel | F2 | User | A | User | A | • • • | User | A | User | A | |
| 15 | Dulcimer | F2 | User | A | User | A | • • • | User | A | User | A | |
| 16 | DrawOrgn | F2 | User | A | User | A | • • • | User | A | User | A | |
| 17 | PercOrgn | F2 | User | A | User | A | • • • | User | A | User | A | |
| 18 | RockOrgn | F2 | User | A | User | A | • • • | User | A | User | A | |
| 19 | ChrchOrg | F2 | User | A | User | A | • • • | User | A | User | A | |
| 20 | ReedOrgn | F2 | User | A | User | A | • • • | User | A | User | A | |
| 21 | Acordion | F2 | User | A | User | A | • • • | User | A | User | A | |
| 22 | Harmnica | F2 | User | A | User | A | • • • | User | A | User | A | |
| 23 | TangoAcd | F2 | User | A | User | A | • • • | User | A | User | A | |
| 24 | NylonGtr | F2 | User | A | User | A | • • • | User | A | User | A | |
| 25 | SteelGtr | F2 | User | A | User | A | • • • | User | A | User | A | |
| 26 | Jazz Gtr | F2 | User | A | User | A | • • • | User | A | User | A | |
| 27 | CleanGtr | F2 | User | A | User | A | • • • | User | A | User | A | |
| 28 | Mute.Gtr | F2 | User | A | User | A | • • • | User | A | User | A | |
| 29 | Ovrdrive | F2 | User | A | User | A | • • • | User | A | User | A | |
| 30 | Dist.Gtr | F2 | User | A | User | A | • • • | User | A | User | A | |
| 31 | GtrHarmo | F2 | User | A | User | A | • • • | User | A | User | A | |
| 32 | Aco.Bass | F2 | User | A | User | A | • • • | User | A | User | A | |
| 33 | FngrBass | F2 | User | A | User | A | • • • | User | A | User | A | |
| 34 | PickBass | F2 | User | A | User | A | • • • | User | A | User | A | |
| 35 | Fretless | F2 | User | A | User | A | • • • | User | A | User | A | |
| 36 | SlapBas1 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 37 | SlapBas2 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 38 | SynBass1 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 39 | SynBass2 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 40 | Violin | F2 | User | A | User | A | • • • | User | A | User | A | |
| 41 | Viola | F2 | User | A | User | A | • • • | User | A | User | A | |
| 42 | Cello | F2 | User | A | User | A | • • • | User | A | User | A | |
| 43 | ContraBs | F2 | User | A | User | A | • • • | User | A | User | A | |
| 44 | Trem.Str | F2 | User | A | User | A | • • • | User | A | User | A | |
| 45 | Pizz.Str | F2 | User | A | User | A | • • • | User | A | User | A | |
| 46 | Harp | F2 | User | A | User | A | • • • | User | A | User | A | |
| 47 | Timpani | F2 | User | A | User | A | • • • | User | A | User | A | |
| 48 | Strings1 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 49 | Strings2 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 50 | Syn.Str1 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 51 | Syn.Str2 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 52 | ChoirAah | F2 | User | A | User | A | • • • | User | A | User | A | |
| 53 | VoiceOoh | F2 | User | A | User | A | • • • | User | A | User | A | |
| 54 | SynVoice | F2 | User | A | User | A | • • • | User | A | User | A | |
| 55 | Orch.Hit | F2 | User | A | User | A | • • • | User | A | User | A | |
| 56 | Trumpet | F2 | User | A | User | A | • • • | User | A | User | A | |
| 57 | Trombone | F2 | User | A | User | A | • • • | User | A | User | A | |
| 58 | Tuba | F2 | User | A | User | A | • • • | User | A | User | A | |
| 59 | Mute.Trp | F2 | User | A | User | A | • • • | User | A | User | A | |
| 60 | Fr.Horn | F2 | User | A | User | A | • • • | User | A | User | A | |
| 61 | BrasSect | F2 | User | A | User | A | • • • | User | A | User | A | |
| 62 | SynBras1 | F2 | User | A | User | A | • • • | User | A | User | A | |
| 63 | SynBras2 | F2 | User | A | User | A | • • • | User | A | User | A | |

5.1.4. MA-5 Native Normal Voice Map (FM32 mode 64 to 127)

| Bank MSB | 125 | | 125 | | 125 | | 125 | | 125 | |
|----------|-----------------|-----|-----------------|-----|-----------------|-----|-----|---|------|-----|
| Pch# | 0 | | 1 | | 2 | | 3~8 | | 9 | |
| | Default | | | | User Assignable | | | | | |
| Note# | Inst | Typ | Inst | Typ | Inst | Typ | | | Inst | Typ |
| 24 | Seq Click H | F4 | Seq Click H | F4 | User | A | • | • | User | A |
| 25 | Brush Tap | F4 | Brush Tap | F4 | User | A | • | • | User | A |
| @ 26 | Brush Swirl | F4 | Brush Swirl | F4 | User | A | • | • | User | A |
| 27 | Brush Slap | F4 | Brush Slap | F4 | User | A | • | • | User | A |
| @ 28 | Brush Tap Swirl | F4 | Brush Tap Swirl | F4 | User | A | • | • | User | A |
| @ 29 | Snare Roll | F4 | Snare Roll | F4 | User | A | • | • | User | A |
| 30 | Castanet | F4 | Castanet | F4 | User | A | • | • | User | A |
| 31 | Snare L | P | Snare L | F4 | User | A | • | • | User | A |
| 32 | Sticks | F4 | Sticks | F4 | User | A | • | • | User | A |
| 33 | Bass Drum L | P | Bass Drum L | F4 | User | A | • | • | User | A |
| 34 | Open Rim Shot | F4 | Open Rim Shot | F4 | User | A | • | • | User | A |
| 35 | Bass Drum M | P | Bass Drum M | F4 | User | A | • | • | User | A |
| 36 | Bass Drum H | P | Bass Drum H | F4 | User | A | • | • | User | A |
| 37 | Closed Rim | F4 | Closed Rim | F4 | User | A | • | • | User | A |
| 38 | Snare M | P | Snare M | F4 | User | A | • | • | User | A |
| 39 | Hand Clap | F4 | Hand Clap | F4 | User | A | • | • | User | A |
| 40 | Snare H | P | Snare H | F4 | User | A | • | • | User | A |
| 41 | Floor Tom L | P | Floor Tom L | F4 | User | A | • | • | User | A |
| 42 | Hi-Hat Closed | P | Hi-Hat Closed | F4 | User | A | • | • | User | A |
| 43 | Floor Tom H | P | Floor Tom H | F4 | User | A | • | • | User | A |
| 44 | Hi-Hat Pedal | P | Hi-Hat Pedal | F4 | User | A | • | • | User | A |
| 45 | Low Tom | P | Low Tom | F4 | User | A | • | • | User | A |
| 46 | Hi-Hat Open | P | Hi-Hat Open | F4 | User | A | • | • | User | A |
| 47 | Mid Tom L | P | Mid Tom L | F4 | User | A | • | • | User | A |
| 48 | Mid Tom H | P | Mid Tom H | F4 | User | A | • | • | User | A |
| 49 | Crash Cymbal 1 | P | Crash Cymbal 1 | F4 | User | A | • | • | User | A |
| 50 | High Tom | P | High Tom | F4 | User | A | • | • | User | A |
| 51 | Ride Cymbal 1 | P | Ride Cymbal 1 | F4 | User | A | • | • | User | A |
| 52 | Chinese Cymbal | P | Chinese Cymbal | F4 | User | A | • | • | User | A |
| 53 | Ride Cymbal | F4 | Ride Cymbal | F4 | User | A | • | • | User | A |
| 54 | Tambourine | F4 | Tambourine | F4 | User | A | • | • | User | A |
| 55 | Splash Cymbal | P | Splash Cymbal | F4 | User | A | • | • | User | A |
| 56 | Cowbell | F4 | Cowbell | F4 | User | A | • | • | User | A |
| 57 | Crash Cymbal 2 | P | Crash Cymbal 2 | F4 | User | A | • | • | User | A |
| 58 | Vibraslap | F4 | Vibraslap | F4 | User | A | • | • | User | A |
| 59 | Ride Cymbal 2 | P | Ride Cymbal 2 | F4 | User | A | • | • | User | A |
| 60 | Bongo H | F4 | Bongo H | F4 | User | A | • | • | User | A |
| 61 | Bongo L | F4 | Bongo L | F4 | User | A | • | • | User | A |
| 62 | Conga H Mute | F4 | Conga H Mute | F4 | User | A | • | • | User | A |
| 63 | Conga H Open | F4 | Conga H Open | F4 | User | A | • | • | User | A |
| 64 | Conga L | F4 | Conga L | F4 | User | A | • | • | User | A |
| 65 | Timbale H | F4 | Timbale H | F4 | User | A | • | • | User | A |
| 66 | Timbale L | F4 | Timbale L | F4 | User | A | • | • | User | A |
| 67 | Agogo H | F4 | Agogo H | F4 | User | A | • | • | User | A |
| 68 | Agogo L | F4 | Agogo L | F4 | User | A | • | • | User | A |
| 69 | Cabasa | F4 | Cabasa | F4 | User | A | • | • | User | A |
| 70 | Maracas | F4 | Maracas | F4 | User | A | • | • | User | A |
| @ 71 | Samba Whistle | F4 | Samba Whistle | F4 | User | A | • | • | User | A |
| @ 72 | Samba Whistle | F4 | Samba Whistle | F4 | User | A | • | • | User | A |
| 73 | Guiro Short | F4 | Guiro Short | F4 | User | A | • | • | User | A |
| 74 | Guiro Long | F4 | Guiro Long | F4 | User | A | • | • | User | A |
| 75 | Claves | F4 | Claves | F4 | User | A | • | • | User | A |
| 76 | Wood Block H | F4 | Wood Block H | F4 | User | A | • | • | User | A |
| 77 | Wood Block L | F4 | Wood Block L | F4 | User | A | • | • | User | A |
| 78 | Cuica Mute | F4 | Cuica Mute | F4 | User | A | • | • | User | A |
| 79 | Cuica Open | F4 | Cuica Open | F4 | User | A | • | • | User | A |
| 80 | Triangle Mute | F4 | Triangle Mute | F4 | User | A | • | • | User | A |
| 81 | Triangle Open | F4 | Triangle Open | F4 | User | A | • | • | User | A |
| 82 | Shaker | F4 | Shaker | F4 | User | A | • | • | User | A |
| 83 | Jingle Bells | F4 | Jingle Bells | F4 | User | A | • | • | User | A |
| 84 | Bell Tree | F4 | Bell Tree | F4 | User | A | • | • | User | A |

*1:50cent/halfnote, #69=F#4

*2:50cent/halfnote, #69=A2

*3:50cent/halfnote, #69=C#4

*4:50cent/halfnote

*5:20cent/halfnote

*6:5cent/halfnote

*7:10cent/halfnote

The voice, which is set to Pch# with
 “*” is treated as drum voice by key
 control judging. (User Bank is also.)

(*) Type F2: FM 2 Operator, F4: FM 4 Operator, P: PCM, A: F2/F4/P Assignable

5.1.5. MA-5 Native Normal Drum Instrument (FM16 mode)

| Bank MSB | 125 | 125 | 125 | 125 | 125 |
|----------|-----------------|-----|-----------------|-----|--------|
| Pch# | 0 | 1 | 2 | 3~8 | 9 |
| Note# | Inst | Typ | Inst | Typ | Inst |
| 24 | Seq Click H | F4 | Seq Click H | F4 | User A |
| 25 | Brush Tap | F4 | Brush Tap | F4 | User A |
| @ 26 | Brush Swirl | F4 | Brush Swirl | F4 | User A |
| 27 | Brush Slap | F4 | Brush Slap | F4 | User A |
| @ 28 | Brush Tap Swirl | F4 | Brush Tap Swirl | F4 | User A |
| @ 29 | Snare Roll | F4 | Snare Roll | F4 | User A |
| 30 | Castanet | F4 | Castanet | F4 | User A |
| 31 | Snare L | P | Snare L | F4 | User A |
| 32 | Sticks | F4 | Sticks | F4 | User A |
| 33 | Bass Drum L | P | Bass Drum L | F4 | User A |
| 34 | Open Rim Shot | F4 | Open Rim Shot | F4 | User A |
| 35 | Bass Drum M | P | Bass Drum M | F4 | User A |
| 36 | Bass Drum H | P | Bass Drum H | F4 | User A |
| 37 | Closed Rim | F4 | Closed Rim | F4 | User A |
| 38 | Snare M | P | Snare M | F4 | User A |
| 39 | Hand Clap | F4 | Hand Clap | F4 | User A |
| 40 | Snare H | P | Snare H | F4 | User A |
| 41 | Floor Tom L | P | Floor Tom L | F4 | User A |
| 42 | Hi-Hat Closed | P | Hi-Hat Closed | F4 | User A |
| 43 | Floor Tom H | P | Floor Tom H | F4 | User A |
| 44 | Hi-Hat Pedal | P | Hi-Hat Pedal | F4 | User A |
| 45 | Low Tom | P | Low Tom | F4 | User A |
| 46 | Hi-Hat Open | P | Hi-Hat Open | F4 | User A |
| 47 | Mid Tom L | P | Mid Tom L | F4 | User A |
| 48 | Mid Tom H | P | Mid Tom H | F4 | User A |
| 49 | Crash Cymbal 1 | P | Crash Cymbal 1 | F4 | User A |
| 50 | High Tom | P | High Tom | F4 | User A |
| 51 | Ride Cymbal 1 | P | Ride Cymbal 1 | F4 | User A |
| 52 | Chinese Cymbal | P | Chinese Cymbal | F4 | User A |
| 53 | Ride Cymbal | F4 | Ride Cymbal | F4 | User A |
| 54 | Tambourine | F4 | Tambourine | F4 | User A |
| 55 | Splash Cymbal | P | Splash Cymbal | F4 | User A |
| 56 | Cowbell | F4 | Cowbell | F4 | User A |
| 57 | Crash Cymbal 2 | P | Crash Cymbal 2 | F4 | User A |
| 58 | Vibraslap | F4 | Vibraslap | F4 | User A |
| 59 | Ride Cymbal 2 | P | Ride Cymbal 2 | F4 | User A |
| 60 | Bongo H | F4 | Bongo H | F4 | User A |
| 61 | Bongo L | F4 | Bongo L | F4 | User A |
| 62 | Conga H Mute | F4 | Conga H Mute | F4 | User A |
| 63 | Conga H Open | F4 | Conga H Open | F4 | User A |
| 64 | Conga L | F4 | Conga L | F4 | User A |
| 65 | Timbale H | F4 | Timbale H | F4 | User A |
| 66 | Timbale L | F4 | Timbale L | F4 | User A |
| 67 | Agogo H | F4 | Agogo H | F4 | User A |
| 68 | Agogo L | F4 | Agogo L | F4 | User A |
| 69 | Cabasa | F4 | Cabasa | F4 | User A |
| 70 | Maracas | F4 | Maracas | F4 | User A |
| @ 71 | Samba Whistle | F4 | Samba Whistle | F4 | User A |
| @ 72 | Samba Whistle | F4 | Samba Whistle | F4 | User A |
| 73 | Guiro Short | F4 | Guiro Short | F4 | User A |
| 74 | Guiro Long | F4 | Guiro Long | F4 | User A |
| 75 | Claves | F4 | Claves | F4 | User A |
| 76 | Wood Block H | F4 | Wood Block H | F4 | User A |
| 77 | Wood Block L | F4 | Wood Block L | F4 | User A |
| 78 | Cuica Mute | F4 | Cuica Mute | F4 | User A |
| 79 | Cuica Open | F4 | Cuica Open | F4 | User A |
| 80 | Triangle Mute | F4 | Triangle Mute | F4 | User A |
| 81 | Triangle Open | F4 | Triangle Open | F4 | User A |
| 82 | Shaker | F4 | Shaker | F4 | User A |
| 83 | Jingle Bells | F4 | Jingle Bells | F4 | User A |
| 84 | Bell Tree | F4 | Bell Tree | F4 | User A |

Only the voice attached "@" reacts to KeyOff.

- Exclusion allotment of Key#42/#44/#46
- Exclusion allotment of Key#71/#72
- Exclusion allotment of Key#73/#74
- Exclusion allotment of Key#78/#79
- Exclusion allotment of Key#80/#81

Use Exclusion allotment, if the voice is set to the above NoteNo. of UserBank.

(*) Type F2: FM 2 Operator, F4: FM 4 Operator, P: PCM, A: F2/F4/P Assignable

5.1.6. MA-5 Native Normal Drum Instrument (FM32 mode)

| Bank MSB | 125 | 125 | 125 | 125 | 125 |
|----------|-----------------|-----|-----------------|-----|--------|
| Pch# | 0 | 1 | 2 | 3~8 | 9 |
| | Default | | User Assignable | | |
| Note# | Inst | Typ | Inst | Typ | Inst |
| 24 | Seq Click H | F2 | Seq Click H | F2 | User A |
| 25 | Brush Tap | F2 | Brush Tap | F2 | User A |
| @ 26 | Brush Swirl | F2 | Brush Swirl | F2 | User A |
| 27 | Brush Slap | F2 | Brush Slap | F2 | User A |
| @ 28 | Brush Tap Swirl | F2 | Brush Tap Swirl | F2 | User A |
| @ 29 | Snare Roll | F2 | Snare Roll | F2 | User A |
| 30 | Castanet | F2 | Castanet | F2 | User A |
| 31 | Snare L | P | Snare L | F2 | User A |
| 32 | Sticks | F2 | Sticks | F2 | User A |
| 33 | Bass Drum L | P | Bass Drum L | F2 | User A |
| 34 | Open Rim Shot | F2 | Open Rim Shot | F2 | User A |
| 35 | Bass Drum M | P | Bass Drum M | F2 | User A |
| 36 | Bass Drum H | P | Bass Drum H | F2 | User A |
| 37 | Closed Rim | F2 | Closed Rim | F2 | User A |
| 38 | Snare M | P | Snare M | F2 | User A |
| 39 | Hand Clap | F2 | Hand Clap | F2 | User A |
| 40 | Snare H | P | Snare H | F2 | User A |
| 41 | Floor Tom L | P | Floor Tom L | F2 | User A |
| 42 | Hi-Hat Closed | P | Hi-Hat Closed | F2 | User A |
| 43 | Floor Tom H | P | Floor Tom H | F2 | User A |
| 44 | Hi-Hat Pedal | P | Hi-Hat Pedal | F2 | User A |
| 45 | Low Tom | P | Low Tom | F2 | User A |
| 46 | Hi-Hat Open | P | Hi-Hat Open | F2 | User A |
| 47 | Mid Tom L | P | Mid Tom L | F2 | User A |
| 48 | Mid Tom H | P | Mid Tom H | F2 | User A |
| 49 | Crash Cymbal 1 | P | Crash Cymbal 1 | F2 | User A |
| 50 | High Tom | P | High Tom | F2 | User A |
| 51 | Ride Cymbal 1 | P | Ride Cymbal 1 | F2 | User A |
| 52 | Chinese Cymbal | P | Chinese Cymbal | F2 | User A |
| 53 | Ride Cymbal | F2 | Ride Cymbal | F2 | User A |
| 54 | Tambourine | F2 | Tambourine | F2 | User A |
| 55 | Splash Cymbal | P | Splash Cymbal | F2 | User A |
| 56 | Cowbell | F2 | Cowbell | F2 | User A |
| 57 | Crash Cymbal 2 | P | Crash Cymbal 2 | F2 | User A |
| 58 | Vibraslap | F2 | Vibraslap | F2 | User A |
| 59 | Ride Cymbal 2 | P | Ride Cymbal 2 | F2 | User A |
| 60 | Bongo H | F2 | Bongo H | F2 | User A |
| 61 | Bongo L | F2 | Bongo L | F2 | User A |
| 62 | Conga H Mute | F2 | Conga H Mute | F2 | User A |
| 63 | Conga H Open | F2 | Conga H Open | F2 | User A |
| 64 | Conga L | F2 | Conga L | F2 | User A |
| 65 | Timbale H | F2 | Timbale H | F2 | User A |
| 66 | Timbale L | F2 | Timbale L | F2 | User A |
| 67 | Agogo H | F2 | Agogo H | F2 | User A |
| 68 | Agogo L | F2 | Agogo L | F2 | User A |
| 69 | Cabasa | F2 | Cabasa | F2 | User A |
| 70 | Maracas | F2 | Maracas | F2 | User A |
| @ 71 | Samba Whistle | F2 | Samba Whistle | F2 | User A |
| @ 72 | Samba Whistle | F2 | Samba Whistle | F2 | User A |
| 73 | Guiro Short | F2 | Guiro Short | F2 | User A |
| 74 | Guiro Long | F2 | Guiro Long | F2 | User A |
| 75 | Claves | F2 | Claves | F2 | User A |
| 76 | Wood Block H | F2 | Wood Block H | F2 | User A |
| 77 | Wood Block L | F2 | Wood Block L | F2 | User A |
| 78 | Cuica Mute | F2 | Cuica Mute | F2 | User A |
| 79 | Cuica Open | F2 | Cuica Open | F2 | User A |
| 80 | Triangle Mute | F2 | Triangle Mute | F2 | User A |
| 81 | Triangle Open | F2 | Triangle Open | F2 | User A |
| 82 | Shaker | F2 | Shaker | F2 | User A |
| 83 | Jingle Bells | F2 | Jingle Bells | F2 | User A |
| 84 | Bell Tree | F2 | Bell Tree | F2 | User A |

Only the voice attached "@" reacts to KeyOff.

- Exclusion allotment of Key#42/#44/#46
- Exclusion allotment of Key#71/#72
- Exclusion allotment of Key#73/#74
- Exclusion allotment of Key#78/#79
- Exclusion allotment of Key#80/#81

Use Exclusion allotment, if the voice is set to the above NoteNo. of UserBank.

(*) Type F2: FM 2 Operator, F4: FM 4 Operator, P: PCM, A: F2/F4/P Assignable

5.1.7. MA-5 Native Normal Drum Instrument (FM32 mode)

| WaveID | Instrument |
|--------|---------------|
| 0 | Bass Drum |
| 1 | Snare Drum |
| 2 | Tom Tom |
| 3 | Hi-Hat Closed |
| 4 | Hi-Hat Open |
| 5 | Ride Cymbal |
| 6 | Crash Cymbal |

5.2. Error Message

5.2.1. Error Message at Input/Output

| Display | Description of error | Cause |
|---|--|--|
| Can not save SMAF (SMF) file. Illegal output stream. | SMAF file cannot be saved. Output stream is not correct. | The document cannot be saved in SMAF (SMF) file. |
| Can not open SMAF (SMF) file. Illegal file format. | SMAF file cannot be opened. Format of the file is not correct. | Format of SMAF (SMF) file is not correct at reading. |
| Can not open MA1 (SMF) file. Illegal file format. | MA1 file cannot be opened. Format of the file is not correct. | Format of MA1 (MA5) is not correct for reading. |
| Can not import from file. Bank Number is different from selected bank. | File cannot be opened. Type of bank select is wrong. | When importing voices of bank row in Voice List, the type of bank select is wrong. |
| Can not open voice file. Illegal file format. | Voice file cannot be opened. Format of the file is not correct. | Voice definition file format error |
| Can not open SMAF file. Can not open SMAF Phrase L2 in L1 mode. | Unable to open a SMAF file. Phrase L2 can not open by L1 mode. | Tried to open a Phrase L2 file by L1 mode. |
| Can not save voice file. Illegal bank voice parameter. | Unable to save a voice file. Setting of banks in voice parameter is incorrect. | Failed to voice export in bank arrangement by Voice List. |
| Can not save SMAF file. Illegal output stream. | Unable to save a SMAF file. The "output stream" is incorrect. | Failed to save for the MASSMAF |
| Can not open file. Illegal file format. | Unable to open a file. The format of the file is incorrect. | Tried to read the file with an extension besides support. |
| Can not convert. DLL: Can not create file. | Unable to convert a file. Unable to create a file. | File can no be generated since error is occurred. |
| Can not convert. DLL: Output buffer overflow. | Unable to convert a file. Unable to fit in a buffer. | Converted file cannot be fit in a buffer. |
| Can not convert. DLL: Illegal format type. | Unable to convert a file. The types of format are incorrect. | There is an invalid identifier. |
| Can not convert. DLL: Illegal parameter of function. | Unable to convert a file. A function parameter value is not correct. | A function parameter value is not normal. |
| Can not convert. DLL: Illegal event. | Unable to convert a file. An event is not correct. | There is an undefined event existing. |
| Can not convert. DLL: Temporary buffer overflow. | Unable to convert a file. The temporary buffer is overflowing. | Temporary buffer overflow |
| Can not convert. File size of SMAF is out of range. (256000 bytes) | Unable to convert a file. File size is over 256000 bytes. | Tried to play a SMAF exceeded 256000byte and to save. |
| Can not assure contents. Total Length is out of range. (2,000,000 msec) | These contents cannot be guaranteed. Total length is over 2000000 (msec). | The total length of the file exceeds 2000000(msec). |
| Can not save File. File path exceed 260byte. | The file path is over 260 bytes. | When the input file path is over 260 bytes. |
| Can not save file. File name exceed 59byte. | The file name is over 59byte. | When the input file name (except for an extension) is over 59 bytes. |
| Can not assure contents. Max Event Density must be under 1000 byte/s. | These contents cannot be guaranteed. The maximum event density is over 1000 at the moment. | When the maximum event density exceeds 1000 (Byte/s) at the moment. |
| Can not assure contents. Average Event Density must be under 500 byte/s. | These contents cannot be guaranteed. Average event density is over 500. | When average event density exceeds 500 (Byte/s). |
| Can not save SMAF file. The size of Stream PCM (total %u byte/s) is out of range. | Unable to save a SMAF. The total size of Stream PCM is exceeded. | When the total size of Stream PCM exceeds a standard (8 K byte/s). |
| Can not convert. DLL: Total length is less than 20(msec). | Unable to convert a file. Total length is 20 or less msec. | The total length after changing into SMAF is too (below 20msec) short. |
| Can not convert. Program Change is specified at the timing of sounding notes. | Unable to convert a file. A program change is during note pronunciation. | When a program change is between note-off from note-on of arbitrary note messages. |
| Can not assure of contents. HV Note interval of 100(ms) is required on HV channel. | Contents cannot be secured. The intervals of the note in HV channel are 100 (ms) necessities. | When the interval of the note in HV channel is under 100 (ms). |

| Display | Description of error | Cause |
|---|--|---|
| Can not convert file. PCM voice setting error: Invalid Loop point setting. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Displays a Voice Name) | Unable to convert a file. Setup of Loop Point is inaccurate. | When LP check shows an error. |
| Can not convert file. PCM voice setting error: Invalid End point setting. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Displays a Voice Name) | Unable to convert a file. Setup of End Point is inaccurate. | When EP check shows an error. |
| Can not convert file. PCM voice setting error: SR <= 1 and XOF is checked. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Displays a Voice Name) | Unable to convert a file. Setting error: SR <= 1 and XOF is checked. | When the check of EG, LPL, and EPL is an error in the case of LP=EP . |
| Can not convert file. PCM voice setting error: DR = 0, SL != 0 and XOF is checked. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Displays a Voice Name) | Unable to convert a file. Setting error: DR = 0, SL != 0 and XOF is checked | When the check of EG, LPL, and EPL is an error in the case of LP=EP . |
| Can not convert file. PCM voice setting error: RR <= 1 and XOF is not checked. Bank MSB/LSB: %u / %u Pch: %u Note: %u (Displays a Voice Name) | Unable to convert a file. Setting error: RR <= 1 and XOF is not checked | When the check of EG, LPL, and EPL is an error in the case of LP=EP. |

5.2.2. Error Message for Start-up

| Display | Description of error | Cause |
|---|---|---|
| Can not open application. Application is already running. | The application has already been started. | An attempt was made to start MA-5 Authoring Tool that has already been started. |
| Can not open application. MA5_AT.ini (initial) file not found. | The application cannot be started. The ini file of MA-5 Authoring Tool does not exist. | MA5_AT.ini does not exist. |
| Can not open application. Illegal parameter of MA-5_AT.ini (initial) file. | The application cannot be started. The parameter of ini file of MA-5 Authoring Tool is not correct. | The setting of parameter of MA-5_AT.ini is not correct. |
| Exit application. As board not found. | Application is ended since MA-5 board is not found. | Can not obtain a Firmware ID; or Firmware ID is not either 0 or 1. |
| Exit application. AS board is not supported. | Application is ended since MA-5 board is not supported. | Firmware ID set to "1." |

5.2.3. Error Message for Internal Input/Output

| Display | Description of error | Cause |
|--|---|--|
| Can not export to M5N Unexpected problem is occurred. | M3N cannot be made. An unexpected problem has occurred. | It was impossible to make M3N due to an unknown problem. |
| Can not export to M5N RAM size overflow. | M3N cannot be made. MA-5 RAM capacity is exceeded. | RAM capacity is exceeded. |

5.2.4. Error Message for MIDI

| Display | Description of error | Cause |
|---|--|--|
| Can not assign sound file. RAM size overflow. (total %u byte) | A sound file is un-assignable. RAM size is exceeded. | When RAM size is exceeded. |
| Can not assign sound file. RAM size overflow. | A sound file is un-assignable. The memory area of MA-5 board is exceeded. | When the memory area of MA-5 board is exceeded. |
| Can not open MIDI device. MIDI device is used another application. | Other applications are using the MIDI device. | A MIDI device has not been opened. A MIDI device has not been gained when [O.K.] of Preference was pushed. |
| Can not open MIDI device. MIDI device is used another application. | Other applications are using the MIDI device. | A MIDI device has not been obtained when [O.K.] of Preference was pushed. |

5.2.5. Error Message for Wave Data

| Display | Description of error | Cause |
|---|---|---|
| Can not open sound file. Stereo sound file is not supported. | Sound file cannot be opened. This is not compatible with stereophonic sound file. | Conversion processing was stopped because WaveFile is stereophonic. |
| Can not convert sound file. Unexpected problem is occurred. | Sound file cannot be converted. | Processing was stopped due to an unknown problem during WaveFile conversion. |
| Can not assign sound file. Numbers of Wave Exceed 128 (For SMAF). | Sound file cannot be assigned. | Because of no space WaveID on Voice List, process is interrupted. |
| Can not convert sound file. Sampling Frequency is not supported. (Must be over 4k Hz) | Sound file cannot be assigned. | With Stream PCM Assign MAP When WaveFile of 8 bit PCM is read Sampling Frequency is under 4000Hz. |
| Can not convert sound file. Sampling Frequency is not supported. (Must be under 8k Hz) | Sound file cannot be assigned. | Sampling Frequency was over 8000 when Wave-File of Mono 8 bit PCM or Stereo 4 bit ADPCM was read by Stream PCM Assign Map. |
| Can not convert sound file. Sampling Frequency is not supported. (Must be under 16k Hz) | Sound file cannot be converted. | Sampling Frequency is over 16000Hz when WaveFile of Mono 4 bit ADPCM is read at Stream PCM Assign MAP |
| Can not convert sound file. Sampling Frequency is not supported. (Must be 4k Hz) | Unable to convert a sound file. | When Wave File of Stereo 8bit PCM was read by Stream PCM Assign Map, Sampling Frequency was except 4000. |
| Can not convert sound file. Sampling Frequency is not supported. (Must be under 48k Hz) | Sound file cannot be converted. | Sampling Frequency is over 48000Hz when WaveFile is read at Voice Edit/PCM. |
| Can not assign stereo sound file. Sound file is already assigned. | Unable to assign a sound file. Other sound files are already assigned. | By two continuations, it cannot register with Stream PCM Assign MAP. |
| Can not assign stereo sound file. Over Wave ID. (ID 1-31) | A sound file is un-assignable. Wave ID. (ID 1-32) is exceeded. | Tried to register the Stream PCM of Stereo into Wave ID 32. |
| Can not assign the 127th wave. | 127th WaveID is unassignable. | It was tried to paste the PCM voice used as WaveID=127 on Voice Assign Map. Or it was going to save and play back the data under edit to which WaveID=127 are assigned. |
| Sampling Frequency is not supported. -Delete sound file. | Can not assign a sound file. Wave ID is overflowed (ID 1-31). | Try to register Stream PCM of Stereo into Wave ID 32. |

5.2.6. Error Message for User's Operation

| Display | Description of error | Cause |
|---|---|---|
| Can not paste voice parameter. Can not assign 4 operators on GM1 mode. | Unable to paste a voice parameter. | 4 operators are pasted from VoiceList to VAM. |
| Can not play. As board not found. | Can not play back. Board can not be found. | When a message does not return to a reproduction position or an indicator level after reproduction. |
| Can not play. Illegal output stream. | Unable to playback. | The playback is un-normal. |
| Can not convert file. As board not found. | Can not convert. Board can not be found. | When saving, FirmwareID of MA-5 board is not 0 or 1. |
| Can not close Voice Edit. Please load wave file or check 'RM'. | Unable to close a Voice Edit. Be sure to check RM, or load a Wave file. | In state, either the voice wave load completed or RM unchecked, O.K button is selected. |
| Can not close Voice Edit. Please load basic waveform. | Unable to close Voice Edit. Please load a basic-waveform. | When "O.K" is pressed in FM Voice Edit; in the condition of which one of WS15, 23, or 31 is selected and when one of operator 1 or 4 is selected; |
| Can not close clear. This basic waveform is used. | Unable to clear. This basic waveform is used. | When the correspond FM basic waveform is used by other operators (include others voice) |
| Can not close Voice Edit. Invalid Loop point setting. | Unable to close a Voice Edit. Loop Point setting is illegal. | In case of the LP check shows an error. |
| Can not close Voice Edit. Invalid End point setting. | Unable to close a Voice Edit. End Point setting is illegal. | In case of the EP check shows an error. |
| Can not close Voice Edit. Setting Error: SR <= 1 and XOF is checked. | Unable to close a Voice Edit. Setting is error: SR <= 1 and XOF is not checked. | EG in case of LP=EP, or check boxes of LPL, and EPL show an error |
| Can not close Voice Edit. Setting Error: DR = 0, SL != 0 and XOF is checked. | Unable to close a Voice Edit. Setting is error: DR = 0, SL != 0 and XOF is checked. | EG in case of LP=EP, or check boxes of LPL and EPL show an error |
| Can not close Voice Edit. Setting Error: RR <= 1 and XOF is not checked. | Unable to close a Voice Edit. Setting is error: RR <= 1 and XOF is not checked. | EG in case of LP=EP, or check boxes of LPL and EPL show an error |
| Can not check AL enable. Number of AL voice exceed16. | Unable to check the AL Enable. | Al voice numbers exceeds 16. |
| The Maximum length of a segment in HV-Script must be under %u bytes. | Contents cannot be secured. The number of the maximum bytes per clause in HV-Script is less than 100 (byte). | When the number of the maximum bytes per clause in HV-Script is over 100 (byte). |
| Can not convert HV-Script. Invalid file format. | HV-Script is inconvertible. It is an unjust format. | When the format of HV-Script which it is going to convert is inaccurate (a header cannot be interpreted). |
| Can not open help. Unexpected problem is occurred. | Unable to open "Help". The unexpected problem is occurred. | A help is not opened on a certain problem. |
| Can not open help. Help file doesn't exist. | Unable to open "Help". There is no help file. | Since there is no help file, a help is not opened. |
| Can not open file.¥n- file size is too large. (Over 65533byte). | Since file size exceeds 65533 bytes, it cannot be read. | The size of the file specified to be karaoke option data is too large. |

5.2.7. Other Error Message

| Display | Description of error | Cause |
|--|--|--|
| Exit application. Unexpected problem is occurred. | Application is ended because of an unexpected problem. | Application is ended because of an unexpected problem. |

5.3. Warning Message

5.3.1. Warning Message at Input/Output

| Display | Display Timing |
|--|---|
| Nonsupport chunk detect. DLL: Illegal chunk found in SMAF. | When a chunk, which SMAF.MA-5 does not define, is found. |
| Contents Code Type is not supported. DLL: Contents Code Type will be ignored. | Un-supporting code type is found in SMAF |
| ATSig Information. DLL: Created by other tool. | When the vendors ID of ATSig differ |
| ATSig Information. DLL: Created by software version. | When the versions of ATSig differ |
| ATSig Information. DLL: Created by Lower version. | When the versions of ATSig differ |
| ATSig Information. DLL: Created by Upper version. | When the versions of ATSig differ |
| ATSig Information. DLL: Illegal Magic Code. | When the magic codes of ATSig differ |
| ATSig Information. DLL: ATSig not found. | When ATSig does not exist |
| Note Number (115-127) in SMAF is not supported. DLL: Note Message (#115-127) is ignored. | Since the note message of 115 to 127 exists, output of note number is controlled. |
| Bank Number of Voice file is adjusted automatically. | When tie processing of the overlapping note message is carried out. |
| Automatically operated. The overlapping note was tied. | All voices registered into VoiceAssignMap Preference When the trial calculation of the amount of RAM size consumption is made and the sum total is over 8176 (Byte). |
| Can not convert. RAM size overflow. | Make a trial calculation of RAM size consumption from all voice registered in VoiceAssignMap and the setting of Stream PCM Reserved in Preference; if the sum total of calculation is over 8176 (Byte). |
| More than one Note messages found on the same duration in a mono mode channel. Only the last Note message will be accepted. | When two or more note messages exist in dilation: 0 in a mono-mode specification channel at the time of a SMAF output. * Only the thing of last note-message is output (it is a filter at DLL). |
| Can not convert. Max Event Density must be under 1000 byte/s. | The maximum event density at the moment is over 100 (Byte/s) at the time of SMF Import. |
| Can not convert. Average Event Density must be under 500 byte/s. | When average event density is over 500 (Byte/s) at the time of SMF Import. |
| Can not output Information to SMF. Invalid Information. | Since the contents of Information are inaccurate, Information cannot be output to SMF. |
| FM voice setting error: Invalid wave style Setting. - Set wave style '0' automatically. | When opening SMAF or a voice file, an unjust Wave style setting is found and it corrects to '0' automatically. |
| Phrase L1 voice file. Can not import BankM:125 Pch#1 bank voice | When the voice file for Phrase L1 is loaded in the Phrase L2 mode and the voice set of BM: 125/Pch#:1 is read and thrown away. |
| Some FM basic waves were overwritten. WS(15):%s WS(23):%s WS(31):%s | When renewal of an address of the FM basic waveform is carried out by Import from Bank Voice file. |
| Number of assigned voices is exceed128. Can not output excess voices. | When a 128 or more-tone is assigned to Voice Assign Map. |
| Invalid HV-Script.¥n- Delete HV-Script. | When inaccurate HV-Script is found by Import from Multi HV Script File. |
| Karaoke grading section is adjusted automatically. | When the karaoke evaluation section is automatically adjusted at the time of SMF reading |

5.3.2. Warning Message for Start up

| Display | Display Timing |
|---|--|
| Automatically operated. System has been changed to use COM%d | When a connection port is changed into the thing different from a setup. |

5.3.3. Warning Message for Wave Data

| Display | Display Timing |
|--|--|
| Please check pitch of actual playing sound. Fs of PCM wave is adjusted automatically. | When Fs of read PCM is over 48000 or less than 1500. |

5.3.4. Warning Message at User's Operation

| Display | Display Timing |
|---|--|
| Exist editing document. Save the document? | When it is going to cancel the application in the state where the voice under edit exists. |
| Exist editing parameter. Save the voice parameter? | When it is going to cancel the application in the state where the voice under edit exists. |
| Loop/End Point is adjusted automatically. | When LP/EP automatic control function starts to the timing which opens PCM Voice Edit. |

5.4. Verification Message

5.4.1. Verification Message for Start up

| Display | Display Timing |
|--|---|
| Firmware Version is older than application Version. Upgrade firmware? | When the firmware version of MA-5 board is older than the version which application hold. |
| Firmware Version is newer than application Version. Downgrade firmware? | When the firmware version of MA-5 board is newer than the version which application hold. |

5.4.2. Verification Message for MIDI

| Display | Display Timing |
|--|---|
| Confirm operation. Send Bank Voice Message? (total 128 voice) Bank MSB/LSB: %u/%u | At the time of voice transmission of the bank sequence in Voice List (Normal) |
| Confirm operation. Send Bank Voice Message? (total 79 voice) Bank MSB/LSB: %u/%u Pch: %u Note: 13-91 | At the time of voice transmission of the bank sequence in Voice List (Drum) |

5.4.3. Verification Message at User's Operation

| Display | Display Timing |
|---|--|
| Confirm operation.Reset MA-5 board? | When Reset in the option menu was clicked. |
| Confirm operation. Sound file will be detached automatically. | An attempt was made to check RM (ON) when a sound file is being loaded into the PCM Voice Edit dialog. |
| Overwriting Voice List. Save the changed voice parameters? | When Open Voice File in the File menu was selected. |
| Overwriting Voice List. Save the changed data of Voice List? | When the Import from Bank Voice in the VoiceList was selected. |
| Overwriting Voice List. Save the changed voice parameters? | When Preference in the Option menu was selected. |
| Overwriting Stream PCM Assign Map. Export to Stream PCM File? | When the Import from Stream PCM File In the Stream PCM Assign Map was selected. |
| HV Extend Voice Map will be overwritten. Save the HV Extend Voice parameter? | When Import from HV Extend Voice File is chosen in HV Extend Voice Map. |
| HV-Script Assign Map will be overwritten. Save the Multi HV-Script? | When Import from Multi HV-Script File is chosen in HV-Script Assign Map. |
| There is no data in HV-Script file. | When the HV-Script file (*. hvs) opened in the HV Script Edit dialog is empty. |
| Confirm operation. Sound file will be detached automatically. | An attempt was made to check RM (ON) when a sound file is being loaded into the PCM Voice Edit dialog. |
| Do you want to delete HV voice parameter? | When deleting HV voice parameter. |
| Do you want to delete HV-Script? | When deleting HV-Script. |
| HV-Script is under edit. Do you want to save file? | When opening HV-Script newly while editing HV-Script. |
| Confirm Operation. Send HV Extend Voice Message. | When performing Send HV Extend Voice Message. |
| Confirm Operation. Send HV-Script Message. | When performing Send HV HV-Script Message. |
| Confirm Operation. Send all parameters of AT? | When performing Send All Parameter. |
| Loop / End Point is adjusted automatically. | When rounding was made because of incorrect both Loop Point and End Point. |
| Do you want to delete this file? | When file is deleted from File List Window. |
| Invalid HV-Script.¥n- Do you want to save HV-Script? | It is inaccurate HV script. |
| Can not convert HV-Script.¥n- Invalid file format. | HV script is inconvertible. It is an unjust file format. |
| Sampling Frequency and Loop / End Point is adjusted automatically. | Fs and LP/EP were automatically adjusted when a file of extended voice list file format (.vm3) is saved in MA-5. |
| AL Noise Voice is changed into Preset Voice. | AL Noise is changed to default voice when a file of extended voice list file format (.vm3) is saved in MA-5. |
| HV Note events exist in SMF. Do you overwrite HV Sequence Edit View? | When it is going to Reload the inside of SMF in which HV Note Event exists. |
| There are FM basic waves already. Do you overwrite assigned FM basic wave? | When FM basic waveform which overlaps what is already registered into the voice file read by Import from Bank Voice file is found. |

5.5. Shortcut Key

In MA-5 Authoring Tool, the following shortcut keys can be used.

Sign “+” means “with”. For example, “[CTRL] + [F4]” means that “Push [F4] key with pushing the [Ctrl]”

5.5.1. Shortcut Key for Common to Each Window

| Key | Operation |
|-----------------------------|--|
| [ESC] | Cancels an editing operation. |
| [DEL] | Deletes the event chosen. |
| [CTRL]+ [F4] | Closes an active editing window. |
| [CTRL]+ [F6](or Tab) | Changes an active window in the editing window opened on the application window. |
| [Alt](or GRPH)+[Tab] | Opens an application window, while minimizing MA-5 authoring tool. |
| [Alt](or GRPH)+[Space key] | Opens an icon popup menu from the title bar of an application window. |
| [Alt](or GRPH)+[-](Hyphen) | Opens an icon popup menu from the title bar of an active editing window. |
| [Alt](or GRPH)+ [F4] | Closes application. |

5.5.2. Shortcut Key for Menu Bar

| Key | Operation |
|------------------------------|---|
| [Alt](or [GRPH])+ Letter key | Executes the menu item corresponding to each letter key. For example, when pushes [E] key with pushing [Alt] (or [GRPH]), the pull-down menu of [Edit] menu will open. In addition, copy will be chosen when [C] key is pushed on it. |
| [Alt](or [GRPH]) | Moves cursor to [File] of menu bar. In this status, it is possible to move cursor to right and left by pushing the cursor key of computer keyboard, and move to up and down on the opened menu. |

5.5.3. Shortcut Key for Control Button

| Key | Operation |
|-------------------|-----------|
| Start/Stop button | [Space] |

5.5.4. Shortcut Key for File Menu

| Key | Operation |
|-----------------|------------|
| Open | [Ctrl]+[O] |
| Save | [Ctrl]+[S] |
| Import from SMF | [Ctrl]+[L] |
| Reload from SMF | [Ctrl]+[R] |

5.5.5. Shortcut Key for Edit Menu

| Key | Operation |
|-------|------------|
| Copy | [Ctrl]+[C] |
| Paste | [Ctrl]+[V] |
| Undo | [Ctrl]+[Z] |
| Redo | [Ctrl]+[Y] |